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Pittsburgh, Pa.

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The Southern California Edison Company sincerely hopes that this Christmas will be one of joy and merriment for you and those near to you—and that the coming year will bring you great prosperity, abundant health and fulfilled expectations.

We also take this opportunity to express our appreciation for the cooperation of the electrical industry and look forward to a bigger, and better year for all in 1936.—Southern California Edison Company Ltd.

HARRY J. BAUER
PRESIDENT

Edison

12-35

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ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power and Gas," and the "Journal of Electricity."

ESTABLISHED 1887

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▼

• ORGANIZATION of a new cooperative league to assume the Herculean task of disposing of Boulder Dam's power in southern California takes on the aspects of a going concern, with definit plans as to where it intends to go. The launching of this program is described in "Cooperation on Parade", page 19.

•

• FIRST SUGGESTIONS for goodwill building have begun to come in as a result of our contest for ideas. There is plenty of room for more such ideas to help the industry win favorable public response.

•

• AN ALREADY GOING CONCERN, in the way of effective and result-bringing cooperation, is the Electrical Equipment Sales Association of Idaho. So busy doing its excellent job has it been that ELECTRICAL WEST has waited long and anxiously for an account of its workings so that the experience of this organization might be employed effectively by other cooperative groups in the West. Highest saturation of electric ranges of any region in the country and more use of electricity on farms than anywhere in the world is the result of this aggressive activity. (See page 21.)

•

• BOILED DOWN to their essential features, the problem papers which will form the basis for this year's contest of the Pacific Coast Electrical Association are printed in this issue. These present the essential problem. Background material may be published from time to time to aid contestants in arriving at solutions.

•

NEXT MONTH

• SOME NEW DEVELOPMENTS in wiring and some revolutionary changes in lighting practice and application are in preparation for the January number. • LIKEWISE, the long awaited second article on public relations, by H. A. Lemmon, is scheduled to appear. • RETAILERS will find a new monthly Appliance Sales Guide a source of selling ideas and methods.

Sales Talks that SOLD Appliances

Case History No. 12

SELLING A SUN LAMP

¶ As he switches on the light from a lamp, Bill launches into his sales talk by placing a high value on KEEPING well, as opposed to curing illness. This is the way electric sunshine should be sold.

BILL SMITH, master salesman, knows that package merchandise has a powerful appeal in Christmas selling. For the bewildered Christmas shopper electrical gifts are a happy solution. So Bill has not neglected his display of the smaller appliances. Likewise, after giving the matter a little thought, he has found a way to make an attractive sun lamp display without using a great deal of floor space. By using manufacturers' material and good lighting he has been able to reproduce the summer atmosphere which is a distinct contrast to the gray days of winter outside. Bill figured it was good psychology to remind the prospect of summer and then show a device which would recapture the warmth and healthfulness of outdoor activity.

¶ Actually Bill isn't really selling sun lamps; he is selling good health, which is probably the most powerful sales appeal known. Bill's display has drawn plenty of casual shoppers to it. Here is the sales talk that has converted many a casual shopper into an enthusiastic sun lamp user.

BILL: "Good afternoon, madam. It is mighty nice to know that you can have the healthful rays of sunlight right in your home no matter what the weather is like, don't you think? This, to me, is about the most humane and valuable thing that electricity gives us humans. It helps us to keep our health, to build our defenses against colds and other illnesses that are always so easy to catch during the winter months."

PROSPECT: "Well I've read something about it. Is it really true that you can prevent colds by using these lamps?"

BILL: "True? I really believe it is. Tell you why. You see, we humans need four things from nature to keep us alive and fit—good air, clean water, nourishing food, and abundant *sunshine*. Without all of these we starve something which we need to keep us shipshape. Now we get air, water and food, but we do not realize how much we starve ourselves of sunlight in our modern ways of living. We live indoors so much, away from the sun. The clothing we wear covers us up so. And in winter even the outdoor sun is weak and unreliable. But thanks to this scientific sun lamp, you can make your own sunshine, to suit your own convenience. Isn't that a real blessing in winter weather?"

¶ Bill also could have told, either from personal experience or from that of one of his customers, of definite results from use of a sunlamp. This is always convincing proof.

PROSPECT: "Yes it is, but does it really take the place of sunshine?"

¶ Without going into tedious technical detail, notice how Bill places convincing authority back of his selling statements.

BILL: "I know how you feel—it would seem as though sunshine had something that mere man couldn't replace, doesn't it, and yet scientific tests in the world's finest clinics have shown that electric sunshine is just exactly the same in health producing qualities as mid-summer sunshine. And in winter it is far superior because it can be relied upon to give you, day after day, exactly the same prescription. Why, all of the hospitals and clinics have these lamps as standard equipment, and doc-

tors, child and baby specialists especially, prescribe daily treatments of these sun baths to prevent rickets and to build strong teeth and bones."

PROSPECT: "Yes, I know, my doctor advised me to give my little boy sun baths regularly. But it's too cold to do that now."

BILL: "Certainly it is too cold, and besides the quality of the sunlight during winter is poor—you've noticed how thin and pale the sunshine is, I'm sure, even when it is present. With this, his sun baths can be given at *your* convenience—while he is taking his bath, while at dinner, or better still just before he goes to sleep. It has a restful influence. I daresay you, yourself, have felt a pleasant relaxation after a day spent out in the sunlight."

PROSPECT: "Yes, I have noticed that but I thought it was from the fresh air and not so much from the sunlight."

BILL: "It is a combination of both and a few minutes under this lamp just before bedtime, not only for the children, but for you and your husband, will promote a restful, refreshing night's sleep. At the same time it will insure the family—that's what it does—it insures you against the loss of this vital ultra-violet light during these gray winter days we have had the past few weeks."

PROSPECT: But isn't it a lot of trouble getting it ready, and all?

BILL: Trouble? I know it seems like a lot of bother sometimes, but see how the manufacturer has anticipated all that for you with this model. Notice how easy it is to move about anywhere. And you can adjust the height to suit you, just like this. What little trouble left is well worth taking when you consider that an ounce of prevention saves you so much on cure.

PROSPECT: "How long is it necessary to stay under the lamp?"

BILL: "It is generally customary to start with short intervals and gradually work up to about 20 minutes. However, after the family has been accustomed to its use, they can take a longer exposure if they wish without sunburn. This little table which accompanies the lamp gives you an idea of the amount of time it takes. It is much the same as when you spend a great deal of time out of doors during the summer months."

PROSPECT: "Well, I know we ought to have one, but aren't they very expensive?"

¶ Notice that Bill repeats the valued features of the appliances before quoting the price so as to establish that value in relation to the price.

BILL: "Considering the fact that you are buying many years of health insurance that can only be had by providing yourself with plenty of ultra-violet light, particularly during the winter, they are very inexpensive really. This model here, for instance, sells for only $....."

PROSPECT: "Oh, that's really much more than I could afford to pay right now, even though I think we really could use one in our family."

¶ Bill could step down the sale with a cheaper model and that is what an ordinary salesman is tempted to do. But notice how Bill substantiates the value for the price asked and how it helps him close the sale.

BILL: "Compared to the lamps we are used to, I can understand very well why you feel that the price of this lamp seems high, but when you consider what it will give—the healthful daily sun treatment to your whole family,—I know you will feel this is the cheapest form of health insurance your whole family can buy. Why it's better than insurance, for it *keeps* you healthy. That's almost priceless isn't it?"

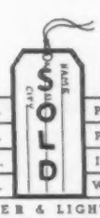
PROSPECT: "That does put a different aspect on it and if it would help to ward off colds it would be worth it. But what about the lamps, how long do they last?"

BILL: "I'm glad you asked that. For they last surprisingly long. Their rated life is 400 hours, which usually takes a family who uses one regularly well on into the second year. Can't I send one out to you so that you can begin tonight to put your family in fighting trim to resist all the colds and illnesses of winter? I can still deliver it tonight in time for a sun bath at your own convenience and pleasure."

PROSPECT: "Very well. Can I arrange terms so that it won't take all my Christmas money?"

BILL: "Certainly. You can pay for it at so much per month. And it will soon be yours to command sunshine any time, rain or shine, whenever you want it. There is nothing in all my stock that I could sell you that would mean so much to you as your family's health. I am sure after you use it a while you'll recommend it to your friends."

¶ By his enthusiasm Bill is convincing. Knowing that it will deliver all that he promises, notice that he has asked in a pleasant way for the assistance of his customer in bringing other prospects to him as the result of this sale. The wise salesman always builds future business on satisfied customers.



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And now...
A SURE Way to Keep Electric Ranges ON THE LINE

● *General Electric "Imperial" Range with Inconel Calrod units and Monel Metal top.*

...and at the same time eliminate the open-coil replacement nuisance

● Electric ranges have proved to utilities their right to the title, "Load-building Appliance Number One."

They answer every housewife's demand for rapid cooking, greater cleanliness, convenience, safety and economy.

And, because they are such dependable load-builders, your first concern should be to *keep them on the line.*

With all open-coil heating units, this has been extremely difficult, due to the effects of spillage and fracturing of the fire-brick by heavy kitchen utensils.

As a result of this short life, you have taken a loss in current consumption, and put up with the nuisance of replacing units.

Now all this can be changed. You can sell electric ranges with CLOSED type heating units... the outstanding example of which is the Inconel Calrod unit.

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The high strength of Inconel sheathing permits the elimination of all heat-absorbing fire-brick, and results in more rapid heating up.

● *G. E. "Sovereign" Electric Range with Calrod units sheathed in Inconel, and Monel Metal top.*

Stop the annoyance and expense of replacing burnt-out or broken open-coil units, and keep each unit of every range in your territory on the line, by featuring Calrod units enclosed in INCONEL.

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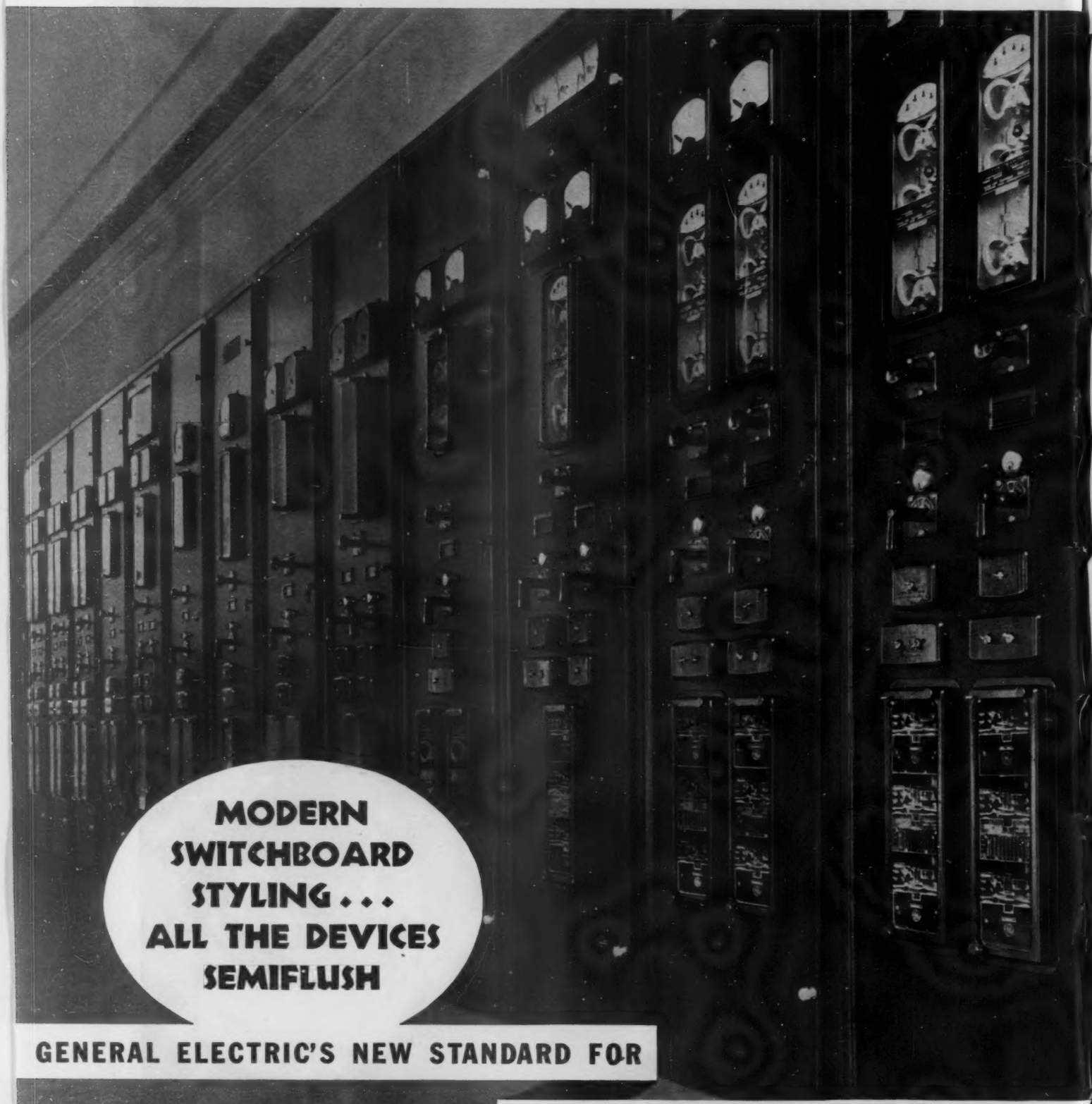

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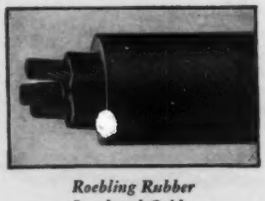

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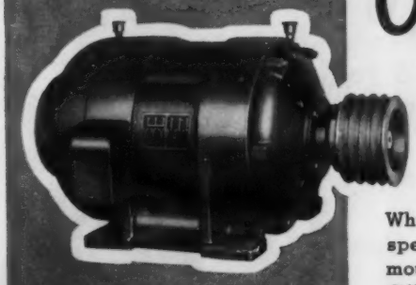

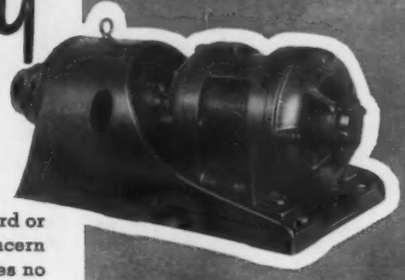

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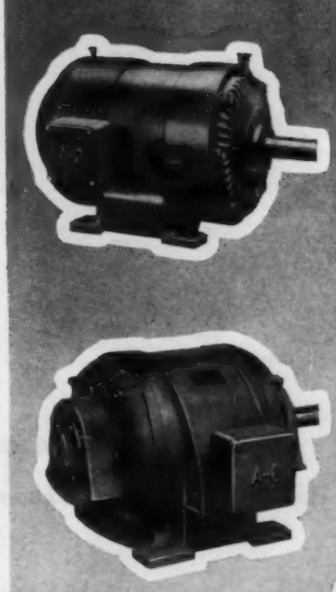

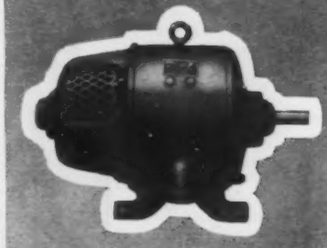

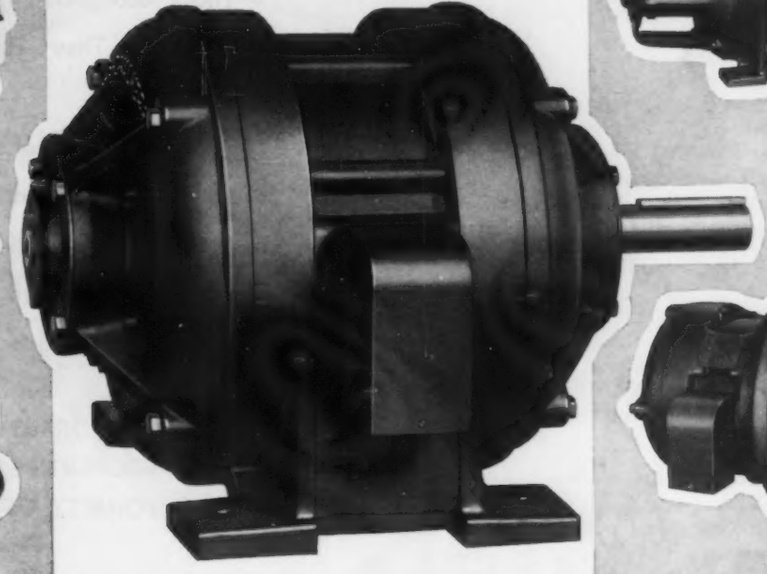

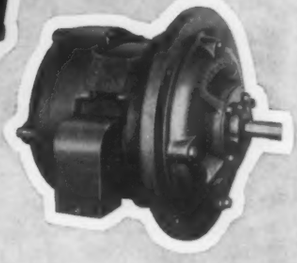

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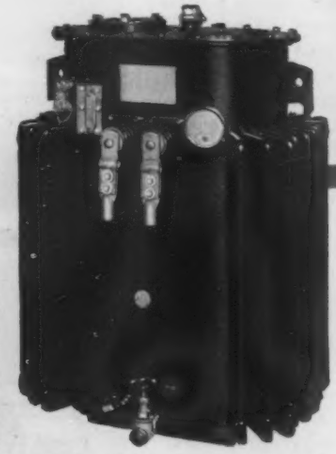

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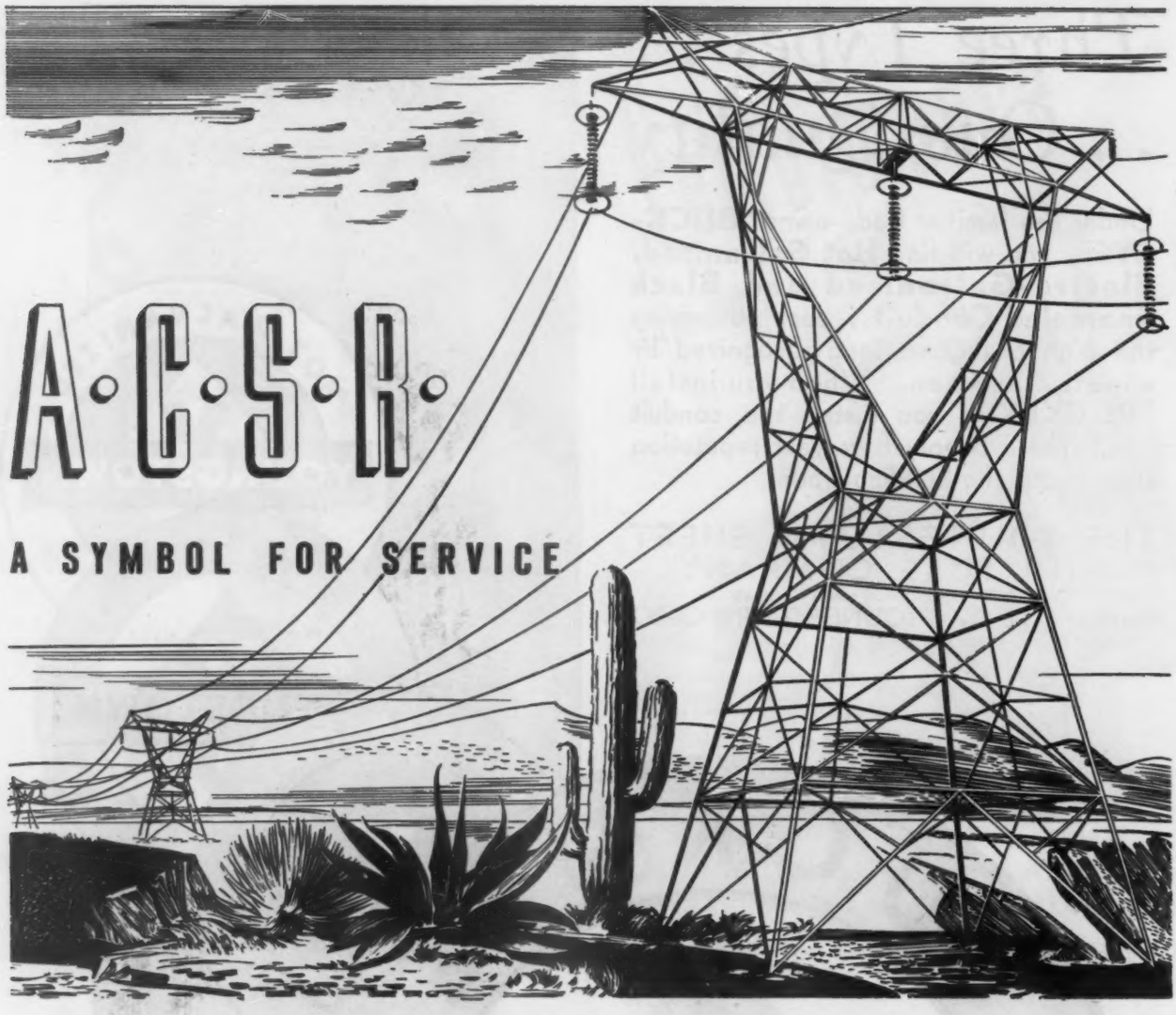

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ALCOA ALUMINUM

1935–FRIGIDAIRE'S MOST SUCCESSFUL YEAR

A GREAT ACHIEVEMENT THAT SERVES NOTICE OF THE OUTSTANDING SUCCESSES THAT ARE TO FOLLOW

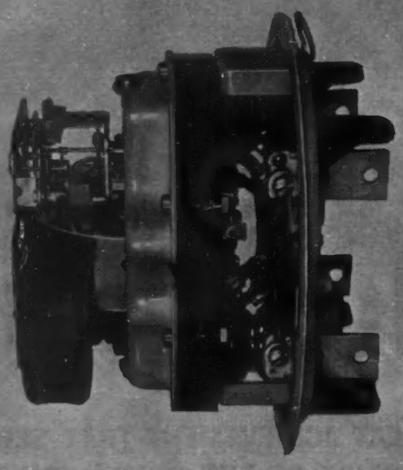
IN 1935 more household Frigidaires were sold than ever before in a single year! . . . This spectacular accomplishment means a great deal—to you and to us. It proves that Frigidaire is more than ever the leader. It shows that we have the public's endorsement . . . that they believe in us. . . . But, what is of greatest importance is the fact that out of this tremendous success comes the experience for the most convincing, the most dramatic sales story ever told. From these outstanding successes we have discovered a new way to sell. It's the smoothest, fastest, straightest road to greater sales volume ever developed. Yes, we've learned a lot from 1935—and we've got the range for '36. Frigidaire Corporation, Dayton, Ohio.

You'll do better with Frigidaire in 1936!

New!

DETACHABLE METERING FOR NETWORKS

New Westinghouse CS-5 Detachable Meter assures polyphase performance with single-phase detachable meter mounting.



Simplicity in design and construction marks every part of the new CS-5 detachable meter.

The new CS-5 Westinghouse meter brings to 2-element meter applications the many unequalled advantages of Detachable Metering. It is enclosed in the same housing, and utilizes the same type S sockets that have brought so many advantages to residence metering.

No longer is it necessary to change the complete meter installation when switching from single-phase to network distribution—provided the single-phase meters are *detachable*. Just changing the socket terminal-block permits mounting a CS-5 meter in a standard type S socket.

The CS-5 has two electromagnets and a two-disc moving element which assure the high degree of accuracy that so distinctly marks the conventional Westinghouse two-element meter.

For more detailed information and new prices, please contact our Meter Specialist in the Westinghouse district office nearest you.

Westinghouse

SINCE 1888

METERS INSTRUMENTS RELAYS

ELECTRICAL WEST

[*Devoted to the economic production, transmission and distribution of electric power and its application to industry, commerce and the home in the Pacific Empire, and to the sale and distribution of electrical utilization devices, equipment and appliances in that area*]

December 1935

To Satisfy the Complaining Customer

By **BERKELEY SNOW**
Northwest Electric Light & Power Association, Portland, Oregon

THE customers of any business like attention. The little extra courtesies, the friendly attitude of wise business men cement the interval between orders with goodwill which holds the consumer's business. Particularly important in this respect is the manner in which complaints are handled. For the average business, improperly handled complaints will result in the customer turning to a competitive concern. For a utility which is monopolistic in character, the customer has no alternative but to continue to accept service *but* he no longer is a friend of the company which does not satisfy his complaints. Rather he becomes a focal point for the spread of anti-company propaganda, and the willing convert to any scheme to destroy the reputation or even the business of the utility.

On the other hand, if the utility settles the complaint immediately and in a satisfactory manner, it has won a good friend. If the utility can permit the customer to satisfy himself on his complaint the reaction is still more favorable and that is one reason why the Portland General Electric Co. has adopted the following plan for handling high bill complaints that does that very thing.

Customers of this company, at Salem, Ore., complaining of high bills or inadequate service generally have been satisfied and the numbers of these complaints in relation to the number of customers have been cut down from year to year through an intelligent method of investigation and report and through conscientious effort to see that the customer understands the cause of his trouble. W. M. Hamilton, division manager of the company, recently described the procedure followed in his district and the equipment used by his investigators, and has kindly permitted *Electrical West* to present this material.

High Bill Complaint Procedure

The complaint is first written up on a form (see below) stating the customer's version of his trouble. Space is provided for a record of several previous months' consumption to be entered by the clerk before turning the form over to the service man. The investigator enters on the form a lamp count, checks the appliances the customer is using and writes his report on the back. On receipt of this report by the office, if it appears that the customer is satisfied, a card nicknamed "soother" (attached) is sent to the customer and personally signed by the division manager. The number of the report is entered on this card to indicate to the customer that the company has conscientiously followed up his complaint, and asks the customer to advise the company if his complaint was not taken care of satisfactorily. Only about 1 in 100 of these cards comes back with reiterated or additional complaint. The completed report is returned to the employee issuing it by way of educating office employees as to the most frequent causes of high bill complaints and the manner of satisfying them.

Investigator's Equipment

Fig. 1 pictures three instruments used by the investigator in his work. On the left is a time and load device by which the investigator can demonstrate to the

PORTLAND GENERAL ELECTRIC COMPANY
CUSTOMER'S COMPLAINT REPORT

No. 97 W. V.

Date 2-15-35

Name Vera L. Alexander Address Rt. 6, Box 539

Complaint by PHONE MAIL PERSON Telephone Number

Nature SERVICE HIGH BILL MISC.

Schedule L.S. Demand D Account No. 9834 9-144

STATEMENT OF CUSTOMER'S ACCOUNT

Name of Reading	Meter Reading	K.W.H. Consumed	Amount of Bill	CREDITS Date	CREDITS Amount
9-5	4318	92			
10-5	4378	60			
11-5	4460	78			
12-5	4530	60			
1-7	4574	64			
2-5	4660	76			

ELECTRIC RANGE
H. S. WATER HEATER
REFRIGERATOR
RADIO ✓
WASHING MACHINE ✓
IRONER
TOASTER ✓
WAFFLE IRON ✓
VACUUM CLEANER ✓
FLAT IRON ✓
PERCOLATOR ✓
OIL BURNER
SUN LAMP
AIR HEATER
LAMPS 5 @ 3 @ 2 @ 1

CALCULATION OF BILL OR OTHER DATA

Card indicated additional kwh consumption as home says are not using as many appliances as they were. Sent a card to make reading.
2-15-35 - Received card marked incorrectly - 4789
Mr. Rankin - Please contact customer & check reading carefully.

RATE CHART

PORTLAND GENERAL ELECTRIC COMPANY
By

Left — PEPCO's customer complaint form used to determine the cause and responsibility for the complaint. Below — The "sooter," a card sent to the customer to assure him that his complaint has received attention and to insure a positive follow-up

Salem, Oregon February 26, 1935

Dear Customer:

We received from you on February 15, 1935 information that your bill from January 7 to February 6, 1935 for electric service seemed excessive.

We have given the matter our attention and believe we have attended to it satisfactorily.

If we have NOT done so, please advise us to that effect by returning this card to us, and greatly oblige. Yours for satisfactory service,

PORTLAND GENERAL ELECTRIC COMPANY

Report Number 97 By.....
Division Manager

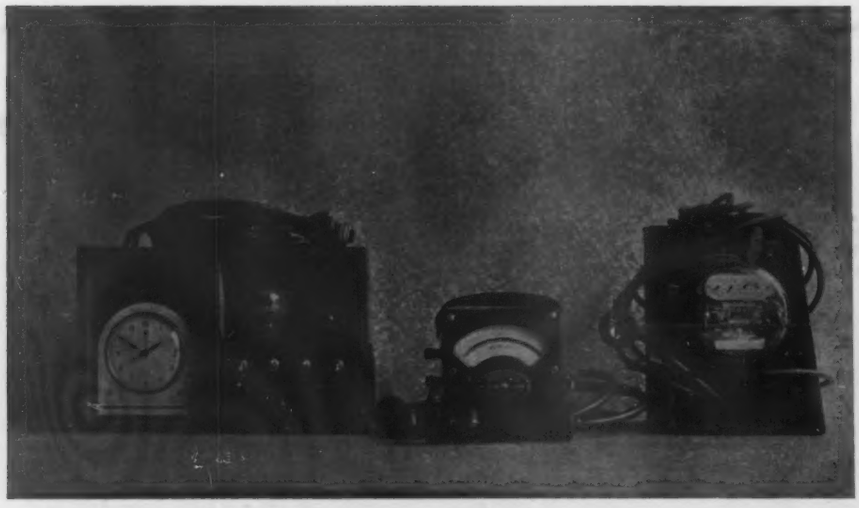


Fig. 1—Equipment used by PEPCO in allowing the customer to "see for himself." Left—A time-load device consisting of an electric clock to check meter revolutions against the known load of two lamps. Center—An ammeter for measuring current, and right—a portable watt-hour meter which can be left on the premises to check a single circuit or appliance load

customer the accuracy of his meter. Used in connection with it is a table (attached) showing the number of seconds required for one revolution of the discs of all types of meters in use loading it with 60 watts, 100 watts, or 160 watts. Plugged in on any house circuit with all the other circuits open, it furnishes an easily understood demonstration.

The middle instrument is a standard portable watt meter used to show the customer the load of each separate appliance. It is frequently found that a customer has been misled, intentionally or otherwise, as to the amount of load pulled by the appliances he has purchased and this device has been found most useful in bringing graphically to the customer the energy consumed by some recently added appliance. This instrument is equipped with an attaching plug on the service side of the meter and a receptacle plug on the load side so that the investigator does not need to be an electrical engineer or even a journeyman electrician to use it.

The instrument on the right is a standard portable watt-hour meter, likewise equipped with an attaching plug and a receptacle, so that it can be very simply cut in ahead of any appliance, isolating that appliance to record its actual consumption over a period of a week or a month. It is generally left in the customer's premises a week and through its use it is possible to show the customer just how much energy the particular appliance under observation consumes in that time.

Two other aids to the investigator in his work are two pamphlets, one entitled "Electricity" and the other "Why Do We Have Demand Rates?" The first tells how to read and test the meter and check the bills rendered for electric service. It is for the customer who is interested in doing this for himself, keeping a check of his consumption, but it is never left to him without first going through it with him and explaining the content. The other book is primarily for the employees though it is occasionally given to large industrial and commercial users.

The coordinated use of these instruments and booklets, coupled with the methods employed in the handling of customers' complaints, has done much to inform non-technical employees as to some of the simpler technicalities in the business and to satisfy complaining customers and keep these complaints from recurring.

Traveling Radio Show Builds Dealer Sales

A RADIO selling stunt which brought sales to dealers throughout the territory of Pacific Power & Light Co. resulted from an unusual promotion feature staged by that company and arranged by Vernon R. Churchill, Portland manager of McCann-Erickson advertising agency, last month. More than 7,000 persons in nine cities served by Pacific Power & Light attended radio exhibits and entertainments. Dealers displayed models of their lines at the same time and report orders taken and hundreds of prospective purchasers interviewed.

Three radio stars were presented as the feature performers at the show, giving two performances each night and one in the afternoon. The group included Tony Stanchfield as announcer, master of ceremonies and pianist; Billy Starkell, accordion virtuoso, and Bert Harris, violinist. At Pasco and Pendleton, Homer Siegfried, a salesman in Pasco and an accomplished tenor, was also presented, as was Darroll Terwilliger, violinist, at Astoria.

Because the show was the first of its kind ever presented in most of the cities it gave dealers a chance to show their new models under fine auspices. Dealers drew by lot their time for playing their radios, each receiving 10 min. on the schedule.

The show was held in the Pacific Power & Light Co. building at Astoria, at Pasco in the Masonic Temple, but at Sunnyside, where it was held in the high school auditorium, the biggest sensation was had when the auditorium was packed and overflow crowds heard the program from a public address system extended to the other classrooms.

Table for Checking Watt-hour Meter Revolutions Against a Known Load
(Figures show number of seconds for one revolution of disc)

Type Size	GE-I	GE-I10	GE-I14	GE-I16	Sang H	Sang HF Sang HC West C West OA West OB
			60 WATT LOAD			
312	18.*	15*	18.*	36.*	12.5*	20.*
323	36.*	30*	36.*	72.	25.0*	40.*
612	36.*	30*	36.*	72.	25.0*	40.*
623	75.	60	72.	144.	50.	80.
712	60.	45	54	108.	37.5*	60.
723	120.	90	108	216.	75.0	120
812	90.	75	90	180.	62.5	100
823	180.	150	180	360.	125.	200
			100 WATT LOAD			
312	10.8*	9.0*	10.8*	21.6*	7.5*	12.0*
323	21.6*	18.0*	21.6*	43.2*	15.0*	24.0*
612	21.6*	18.0*	21.6*	43.2*	15.0*	24.0*
623	45.0*	36.0*	43.2*	86.4	30.0*	48.0
712	36.0*	27.0*	32.4*	64.2	22.5*	36.0*
723	72.0	54.0	64.8	129.6	45.0	72.0
812	54.0	45.0	54.0	108.0	37.5*	60.0
823	108.0	90.0	108.0	216.0	75.0	120.0
			160 WATT LOAD			
312	6.75*	5.625*	6.75*	13.5*	4.7*	7.5*
323	13.5*	11.25*	13.5*	27.*	9.375*	15.*
612	13.5*	11.25*	13.5*	27.*	9.375*	15.*
623	28.125*	22.5*	27.*	54.*	18.75*	30.*
712	22.5*	16.875*	20.25*	40.5*	14.*	22.5*
723	45.*	33.75*	40.5*	81.*	28.125*	45.*
812	33.75*	28.125*	33.75*	67.5	23.44*	37.5*
823	67.5*	56.25	67.5	135.	46.9*	75.

Those marked * are best suited to make tests on in this manner. Larger meters do not test well on such small amount of load.

Cooperation on Parade + + +

[*Forecast of forthcoming cooperative merchandizing activities, and review of activities in progress or completed, a summary of cooperation at work throughout the West*]

Christmas season is that of outdoor lighted trees. Last year the approach to the Coliseum, Los Angeles, was lighted like this by Bureau of Power and Light

Purposes of New League Told Industry

THE organization of the Electrical Development League of Southern California as a coordinating agency to further every phase of activity within the electrical industry in Southern California was announced Nov. 4 at a meeting of the Los Angeles, Calif., Electric Club. The League, sponsored by the Electric Club membership, is representative of every branch of the industry in the South and has for one of its primary purposes the development of the electrical products market to enable the beneficial use of Boulder Dam power when it becomes available.

The administration of the League will be by a board of trustees made up of the various interests in the industry. Those selected for the first board, with provision for the addition of others as may seem desirable, are: M. G. Sues, Leo J. Meyberg Co., representing the electrical appliance distributors; Will H. Davie, Allied Industries Inc., representing the electrical manufacturers' agents; A. L. Stone, Stone Electric Supply Co., representing the electrical contractors; Fred B. Lewis, vice-president and general manager, Southern California Edison Co., representing the Southern California Edison Co.; Burdette Moody, business agent, Los Angeles Bureau of Power and Light, representing the Bureau of Power and Light; A. E. Hitchner, Westinghouse Electric and Manufacturing Co., representing the electrical manufacturers; F. C. Todt, General Electric Supply Corp., representing the electrical wholesalers; John C. Holland, Holland Electric Shop, representing the Electrical Retail Assn.; Van Pender, Barker Bros., representing the Los Angeles downtown stores.

The officers, each a member of the board, are: Mr. Sues, president; Mr. Davie, vice-president; Mr. Stone, secretary-treasurer. F. L. Hockensmith, for many years a recognized leader in Southern California industrial affairs, has been selected by the trustees as general manager of the League, to serve as executive head of the organization and to bring into active operation the large program that is involved.

Formal announcement of the formation of the League and its tentative plan of operation was made by B. F. Woodard, assistant general counsel of the Edison Company and president of the Electric Club, at a meeting attended by more than 325 representative men of the electrical industry.

"The large amount of power to come into Southern California from the Boulder Canyon development is a direct challenge to the electrical industry here," Mr. Woodard said in an outline of the objectives of the League.

"This obligation is but an opportunity to do something. He who has no obligations seldom does anything either for himself or his community. Here is an obligation so large and so comprehensive that it presents an opportunity to the whole industry and thousands of opportunities to every man and institution represented here. In meeting this opportunity every one here may, in fact must, take his part, and the extent to which each shall do his part well shall measure the share in the benefits bound to flow from this unique opportunity. In short, what we are today presenting is a plan by and through which each of you may, by his own efforts in cooperating with the efforts of his fellows, do much for himself, his family and his community."

Mr. Woodard announced that pledges for amounts sufficient for the first year's budget have been assured.

Summarizing the obligations which have been assumed by Southern California under contracts with the United States government for Boulder Dam power, Mr. Woodard presented the following figures as closely estimating the kilowatt hours to be received and disposed of over a period of years:

1st year	429,000,000	kw.-hr.
2nd year	1,303,000,000	"
3rd year	2,023,000,000	"
4th year	2,742,000,000	"
5th year	3,564,000,000	"
6th year	3,953,000,000	"
7th year	4,115,000,000	"

"Southern California has an enviable record of accomplishment attained entirely by a spirit of organized effort,"

F. L. HOCKENSMITH

M. G. SUES

CARL BURRATTI

B. F. WOODWARD

Mr. Sues declared in outlining the need for the League and its potentialities.

"Because the use of electrical products represents modernism and we are in a period of modernization in business and in the home, and by reason of the fact that the Boulder power project offers the possibility for the development of an electrical era that is greater than any of the previous Southern California developments we, in the industry, have an opportunity for advancement, progress and profit in the succeeding years that is greater than we have ever known. The publicity which has already been given the Boulder Dam project has had a tremendous effect. The public already has started to think in terms of complete electrification.

"By coordinated effort, by uniting the entire industry in a common purpose, by reaching for a definite objective, we can bring advancement and prosperity to every individual in our industry. The Electrical Development League of Southern California was formed for this purpose.

"In much of our work we can each go our own way—or we think we can—manufacturers building their appliances, distributors setting up their own dealer outlets, fighting their own competitive battles . . . commercial departments, electrical dealers, and contractors selling goods, trying to build more wiring jobs . . . power companies striving to build their loads. But we cannot promote the full possibilities of the electrical industry on such a basis. The stakes are too big, our potential profits too important, and the technical elements involved make it imperative for us to act together.

"In our own field through the medium of campaigns and promotional effort the results have been phenomenal. Before the Electric Cooperative Campaign of 1920 the average number of convenience outlets in use was one to each home. Within a five year period this average was increased to one convenience outlet per room in each home.

●

F. L. Hockensmith, general manager of the newly organized Electrical Development League of Southern California, for 18 years was connected with the B. F. Goodrich Co. The last 8 of these years he served in the capacity of district sales manager in Los Angeles for Southern California, Arizona, New Mexico and El Paso, Texas. In April, 1933, he took the position of district manager for the Rubber Manufacturers Association. The rubber industry established 14 of these district offices in strategic points in the United States. His work in this connection was primarily market control and dealer organization — the maintenance of a neutral office in the rubber industry

M. G. Sues, President of the new Electrical Development League of Southern California

Carl L. Burratti, President last year of Los Angeles Electric Club, when the program had its inception

B. F. Woodward, President Los Angeles Electric Club, whose work brought the League into being

The history of the electrical industry is one of a series of such achievements. In the main, however, group activity has been spasmodic and confined to a group within the industry primarily affected.

"The idea behind the League is to make the promotion and sale of electrical products a permanent and consistent program to be participated in by each and every branch of the industry. For real success the program depends upon regimentation. It depends on salesmanship, renewed and intensive. It depends on the selling of our industry and our product in every field in Southern California. It will require the interest of the entire industry joined together toward the same objective—BUY ELECTRIC—and to make Southern California the most electrified area anywhere.

"In the past we have witnessed activities conducted by national organizations, by state groups, by individual branches of the industry, by individual utilities, but this is the first time that a program has been formed to embrace the entire electrical industry for Southern California alone, to meet Southern California problems and to develop the industry in Southern California. With such representation it is anticipated that all operations will be programmed to the best interests of the industry as a whole, and that each group will lend its full support to the success of the program.

"The League is too young to be in a position to present to you at this time a carefully well-planned campaign of action. However, the machinery has been set up and it will be forthcoming. Our problem is to increase the popularity of electrical products with the industrial and domestic consumer. It will do no good for us merely to be sold on it ourselves. Therefore, any program developed by this League will be directed toward consumers and the wealth of man-power available will be enlisted to carry the story to them."

The establishment of headquarters for the League at 514 Chamber of Commerce Building in Los Angeles was announced by Mr. Hockensmith. Members of the board of trustees, he said, would meet each Wednesday afternoon.

"Neutrality is the basic word in the League operation," Mr. Hockensmith said, "and it will be our purpose to see that it is maintained. Financial support is necessary but the growth of the League can only be developed in proportion to the enthusiastic support which can be generated and obtained in the field collectively.

"There are approximately 10,000 people connected with the electrical industry in Southern California. It is the responsibility of the industry, with the assistance of the League office, to mold these people into a united front."

Organization of Idaho Dealers Cooperative Plan Described

By L. W. BRAINARD,
Sales Manager, Idaho Power Co., Boise, Idaho

THE Electrical Equipment Sales Association, or E. E. S. A., as it is commonly termed, is a cooperative organization of those dealers doing business in all the towns and cities served by the Idaho Power Co., and is so organized as to bring the benefits of its cooperative efforts to all dealers in ranges, refrigerators, water heaters, small appliances, radio, lighting fixtures and automatic water systems, whether these dealers sell one or more of these devices. With over 300 members segregated into six geographic districts each comprising a fairly large center and adjacent towns, the association provides a vehicle for electrical appliance promotion from eastern Oregon across the southern portion of the state of Idaho for a distance of about 400 miles.

The Association is the culmination of the development of a sales philosophy that recognizes that the more outlets for electrical appliances there are in the territory and the more active these outlets become the greater will be the sales of these appliances both for the company and the dealers, and the better will be the service enjoyed by each customer.

When the "1930 Outline of Commercial Activities" was set up a quota for range sales was made on the basis of sales by the company's commercial department plus the sales by other dealers in the territory. Thus in the results for the year, division managers were given credit on their division quotas for sales made by other dealers operating in their divisions equally with ranges sold by their own employees, so that there was no incentive for the company organization to compete destructively with other dealers and waste sales effort on other dealer's prospects. This practice worked out so well for ranges in 1930 that it was extended to include refrigerators in the following year and has been an essential element of company load building plans ever since.

The next step in the development of the sales philosophy of encouraging participation by all outlets was the "Code of Ethics for All Employees of the Idaho Power Company" written by K. M. Robinson, then assistant general manager, now president of the company, and published in the company's "New Business and Load Building Activities for 1931." Besides this publication, this Code was mimeographed and placed in the hands of every employe of the company and before long it became and still continues to be the bible by which employes conduct their relationships with other electrical dealers and contractors. (See ELECTRICAL WEST, p. 76-7, Feb. 1932).

By 1932 the interest of the other dealers in the electrical equipment market had increased to a point where the company felt that the situation demanded a more positive cooperative program, and this resulted in the setting up of the load building plan for that year under the title "Dealer-Utility Cooperative Business Building Program, 1932." In this book, the "Code of Ethics" was reprinted and certain more tangible and definite regulations for governing the relationship between the company and the dealers were embodied in a statement entitled "The Company's Merchandising Policy." This document listed fifteen "wills" and "will nots" on which verbal agreement had been reached between the management and some of the dealers. The essence of this policy is summarized as follows:

The company will endeavor, at all times, to so conduct its merchandising activities as to offer the greatest possible encouragement to other merchants and dealers in the sale of electrical energy consuming devices.

Will maintain retail prices on all electric appliances, that have received reasonable customer acceptance, consistent with present-day merchandising practices.

Will not offer premiums or free merchandise to induce sales.

Will not give excessive trade-in allowances.

Will use sales at special prices only to move obsolete, unseasonable, or otherwise depreciated merchandise.

Will sell merchandise on deferred payments, the terms of which will coincide with generally accepted good business practices.

Will offer no special inducement designed to promote the sale of electrical appliances, other than those considered to be in the pioneering stages, which cannot profitably be offered by dealers or merchants.

Will, in connection with the devices sold by itself, offer and maintain a guarantee in accordance with the manufacturer's policy.

Will, insofar as practicable, give the same measure of "service" on all appliances, whether purchased from the company or from a dealer.

"Will not sell lighting fixtures in localities where adequate facilities for purchase from established dealers are available to customer.

Will not engage in the wiring of buildings for any purpose nor permit its employes to do so, except in the few locations where no local adequate facilities are available, and will discontinue in these whenever such may be established.

Will not rent, loan or make free trial of appliances except those generally considered as still being in the pioneering stage.

Will not solicit, and prefers not to serve new or renewal lamp contracts.

Will utilize opportunities for advertising with its service bills to promote the use of electrical energy or for the purpose of popularizing the need for electrical devices.

Will continue its policy of devoting a generous share of its publicity toward the use of electrical energy consuming devices with the end in view that merchants and dealers will benefit by this publicity, and by tying their advertising in with it, utilize this to their individual advantage.

Around the central ad of the association dealers and the utility tie individual sales offerings

All Decorated Like a Christmas Tree

A huge Christmas card was the central feature of the Holiday decorations used by the Pacific Power & Light Co. in the unusual display it had on the face of its new Yakima office last year. Roy Samuels, window trimmer for the Yakima District, was responsible for this unusual display. The large Christmas card was set above an attractive display of appliances in the regular window. Festoons of lights and greenery gave the entire building a holiday appearance. Large candles located in the upper window balanced the design

•

This 1932 outline is still standard for showing how the company expects to carry on its relationship with the dealers. Details of the program have changed from year to year but the company policy has not, and new dealers coming into the territory are given a copy of this book so that they may see what sort of competitive treatment they may expect from the company, and what results they may obtain by entering into cooperation with us.

Considerable impetus to the dealer cooperative activity was given in 1931 by the inauguration of the National Refrigeration Bureau. The writer, as state director for Idaho, organized three local bureaus at Pocatello, Twin Falls and Boise. This movement was followed shortly by the National Cookery Council and it proved comparatively simple to broaden the scope of these three bureaus to include electric ranges under the new name, "Refrigeration and Cookery Bureau."

More recently the national campaigns on table cookery, running water and Better Light-Better Sight, coupled with the company's desire to promote radio, indicated to the company the need of still further expansion of these local bureaus. The final outcome was the formation of the Electrical Equipment Sales Assn. in 1934.

An excellent opportunity for initiating this association was given to the company through the winning of the 1934 George A. Hughes Award for the greatest contribution to the advancement of electric cookery in that year. This furnished the motive for a series of dealer meetings throughout the territory, in which the company acquainted the dealers with the achievement of winning this national award and expressed to them its appreciation of the part they played in this achievement.

At the same time, the need for a closer knit organization covering all kinds of electric appliances, in which cooperative effort could be made productive of more sales and greater profits for all, was broached. No definite plan was suggested, but the dealers attending these meetings in each of the six geographic districts in the territory were asked to appoint a district representative to confer with the company management on a form of permanent organization.

As a result of the subsequent conferences the Electrical Equipment Sales Assn. was set up in the six districts, with a district general chairman and secretary and five bureau chairmen, each to take charge of one of the five cooperative programs in which were included allied appliances.

These bureaus were named: Refrigeration and Cookery Bureau, Table Cookery Bureau, Running Water Bureau, Radio Bureau, Better Light-Better Sight Bureau.

The district chairman and the five bureau chairmen in each district then became the executive committee of the organization. Members could ally themselves within their district with one or more of the bureaus in which they were interested, and membership was opened to all those having a related interest in the sale of electric equipment, such as the interest of paint and wall paper dealers and eye specialists in the Better Light-Better Sight movement.

Where possible the bureau chairmen were selected from different towns in the district so that the executive committee would have a wide-spread geographic representation as well as a representation based upon the business interests of its members. To coordinate the entire activity of all districts and all bureaus, the writer was selected as general secretary.

This form of organization has made it easy to initiate new activities and to secure the opinion of interested parties as to these activities. *A proposed activity or campaign is first submitted to the executive committee,* and, after receiving endorsement from that body, is mailed in outline form to all members of the bureau concerned. Proposed advertising of the E.E.S.A. with the media and time schedule to be followed in each district is also sent out by the general secretary to the Bureau members concerned, and at the same time the newspapers to be used are urged to solicit tie-in advertising by the members.

The advertising run over the name of the E.E.S.A. is entirely promotional in character. Before the formation of the association, such advertising used to be run over the name of the company with the phrase "See Your Dealer" printed in it. Such advertising was found to be comparatively ineffective.

Now that it is carried over the name of the association, however, with a number of tie-in ads of members surrounding it, its value and effect is found to be greatly enhanced. For identification of members an association emblem was adopted for use in members' advertising and floor and window displays. Billboard and bill stuffer advertising has also run in the name of the association and all cooperative shows and exhibits are held under its auspices. Further association activity has been the purchase of block subscriptions for members to various national publications devoted to the promotion of electric appliances such as "Table Cookery Topics," "Better Light-Better Sight News," and "Electric Kitchen Times."

Since the completion of the six district organizations, general membership meetings have been held in all districts and have been well attended. Topics of a general nature have been brought up by various members from time to time and will be the subjects of future meetings. A report of all electric appliances sold each month is sent regularly to the general secretary by each of the dealer members, and the secretary in turn issues a consolidated report back to the members showing the number of dealers reporting and the number of appliances sold by districts and the total for all districts. These reports have enabled the company to keep accurate records of the growth of appliances on its lines and have stimulated the other dealers in their general appliance selling activity. The summary figures of these reports are now included monthly in the table in ELECTRIC WEST.

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• DATES for the 41st Western Furniture Market with its concurrent Western radio and appliance show have been announced by the board of directors of the Western Furniture Exchange, San Francisco, for Feb. 3-8, 1936. Programs for the daily luncheon programs as well as exhibits at the Furniture Exchange are in preparation at the present time.

Valley Dealers Launch Cooperative Program

INAUGURATING a program of more extensive dealer cooperative service, not only for appliance dealers but for their salesmen as well, the merchandising division of San Joaquin Power was dinner host to more than 350 dealers in electrical and gas appliances and their employees on Friday evening, Oct. 25, in the Power Building, Fresno.

Commenting on the excellent attendance at the meeting, Chairman Frank A. Easton declared that this was only the first of a series of similar meetings to be held throughout the company's territory in the interests of dealers and their salesmen.

Hinting briefly at the San Joaquin company's plans for a greater 1936 dealer cooperative program, Easton explained that this first meeting was timed to aid salesmen and dealers to take full advantage of the anticipated holiday trade. Easton then introduced S. F. Worswick, noted sales counsellor and author, who brought a stirring and inspirational sales message to an appreciative audience.

Citing numerous instances of errors in selling, Worswick injected many humorous and telling remarks tending to point out weaknesses of salesmen and sales organizations which result in lost customers. So instructive and inspiring was Worswick's message that the audience declared it one of the finest meetings of its kind ever attended. Included in those voicing their enthusiasm at the meeting were officers of the Fresno Electrical Appliance Society and the Fresno Gas Appliance Society.

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Space Sold Out for San Diego Appliance Show

WITH almost no selling effort the space originally chartered for the electrical exposition in San Diego Dec. 4-8 has already been taken, according to announcement by J. Clark Chamberlain, secretary-manager of the Bureau of Radio and Electrical Appliances of San Diego County, sponsoring the third annual exposition. "From now on it is a case of squeezing or re-arranging in order to take care of those not already in who have been promised space," said Mr. Chamberlain.

Exhibitors were being urged to plan exhibits featuring action display. It was pointed out that thousands of people would visit the show to decide what to buy for Christmas and that showmanship and display ideas along unusual lines would help to convince them to buy electrical gifts. It was also urged that displays not be crowded so as to allow room for the large numbers of people to see and be sold.

Alameda Range Men Learn Cooking

Henry A. Lewicki; sales manager of the Bureau of Electricity, Alameda, Calif., believes that a salesman who knows how to cook electrically is a good salesman. Hence he took advantage of the offer of Miss Myrtle Turney, home economist, Edison General Electric Appliance Co., and conducted a cooking school for his salesmen. Left to right in the picture above are H. A. Lewicki, Glenn Warfield, Clyde Allen, Fred Carter, Gene Garcia, Arthur Grimmard, Harold Halladay, Miss Turney, Dick Tompkins, Charles Phillips, Jack Zarwell; and seated is Curtis Anderson

A supporting advertising barrage was being planned by Forrest Raymond, superintendent of advertising, San Diego Consolidated Gas & Electric Co., to which dealer tie-in ads were being pledged in large numbers. Radio programs will also be used as well as outdoor billboards and street car dash posters. Dealer displays throughout the city will also use these posters for window decoration.

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First "New American" Homes Opened

First of the General Electric Co.'s "All Electric" or "New American" homes in Los Angeles and San Francisco were announced last month and thousands of visitors poured through them during the display period. The Los Angeles home was located at 285 Beverly Glen Canyon while that in San Francisco was located at 71 Fernwood Blvd. in the Monterey Heights district.

At the same time in Los Angeles was exhibited an all-electric home featuring wall heaters not only to provide heat in winter but also to cool the house in warm weather. The home was purchased by Bing Crosby's brother and it drew considerable attention as an all-electric residence.

In the General Electric home the G. E. kitchen is featured and electrical appliances are located in every room of the house. An air conditioning plant is also exhibited, although in the San Francisco home it is not connected.

Lighting in the San Francisco home is not up to the General Electric Nela Park standards which is the only note out of line with the all-electric idea.

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"Kitchen Companions" Southern Sierras Feature

ESPECIALLY to promote water heating in connection with electric ranges, The Southern Sierras Power Co. started recently a series of seven mailings of special broadsides prepared in cooperation with the manufacturers of Thermador water heaters, Westinghouse and Crawford electric ranges. Attractive broadsides in color were sent to a special list of owners of old ranges who had no water heaters as well as to a preferred list of good prospects with a credit rating. In all the mailing is about 10,000 for each piece.

The mailings are timed so that they appear as a follow-up to an eight-column newspaper advertisement run in the country papers throughout its system by The Southern Sierras Power Co. Since most newspapers are of seven-column make-up an eight-column ad of necessity must be run as a center

spread, which naturally dominates the newspaper.

The campaign carries on through the Christmas holidays featuring the theme "Kitchen Companions"; also the new water heating rate and the savings that can be made by installing a water heater so as to get down on the low rate. Seven features of electric water heaters are listed—economy, automatic operation, convenience, accuracy, coolness, cleanliness and safety.

It was pointed out by Bill Fleming, in charge of merchandise sales, that dealers in these appliances can benefit from the publicity being given the electric cooking and water heating idea through the medium of these advertisements.

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Campaigns' Value Proved by Data

Over 5,000 refrigerators more than last year were sold during the refrigeration campaign of the Electric Appliance Society of Northern California alone, according to preliminary figures compiled by the society. The final results have not been completely compiled as yet. This gives further support to the already well proved fact that the campaigns are fine stimulators of buying.

One of the most convincing facts in support of this is the slump in electric vacuum cleaner sales this year because distributors failed to agree upon and take part in another campaign. In 1933, during the fateful March bank holiday period, there were 962 vacuum cleaners sold in Northern California, according to P. G. and E. Co. dealer reports. In March 1934 a vacuum cleaner campaign was staged and resulted in a sale of 2,092 cleaners, or 117 per cent increase over the previous March. During the 1934 campaign, in San Francisco alone, there were 1,130 cleaners sold. Yet in 1935, without a campaign, San Francisco dealers only sold 869 cleaners, or about the same as during the fateful bank holiday period.

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• NATIONAL PUBLICITY is being given dealers and the Portland General Electric Co. for a cooperative campaign selling Westinghouse roasters to a total of 471 units in Portland and vicinity. Terms of 95 cents down and $2 per month were offered, the sales being made by dealers through the company, a dollar bonus being given dealers for each sale on company lines. As a special inducement, a small ham and a bag of beans was presented with each roaster sold. Cooperative advertising with dealer tie-in to the extent of three full pages in city dailies and considerable space in out-of-town papers, made the campaign an unusual one.

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• CHICO ELECTRICAL EXPOSITION, sponsored by twelve local electrical dealers in cooperation with Pacific Gas and Electric Co. proved an outstanding success in the way of a sales promotion feature during the month of October. About 5,000 people visited the show during its 3-day session and $1,605 in sales of appliances are directly traceable to the show within 10 days after its close. Full details of the activity will be reported in a later issue in order to describe how it was set up and how other shows of a similar character can be planned in other communities.

DEALER SALES REPORTS—SEPTEMBER-OCTOBER 1935

A Summary of the Dealer Reports Compiled by Associations, Societies, or Bureaus, or Dealer Contact Departments of Utilities

APPLIANCE	P. G. & E. Co.[1]		San Diego Cons. G. & E. Co.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co., Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	*Sept. 1935	10 Mos. Dec.-Sept.	*Sept. 1935	Year to date	October 1935	Year to date	October 1935	Year to date	October 1935	Year to date	October 1935	Year to date	October 1935	Year to date
Ranges	311	2,637	36	246	91	1,242	527	4,724	135	1,636	38	.....	167	2,407
Water Heaters	224	2,009	29	325	60	614	285	2,552	15	386	17	.....	138	257
Air Heaters—aux.	467	3,957	20	563	102	154	408	1,110	213	417	128	.....	.....	.....
Air Heaters, 220	77	614	.....	.....	91	510	.....	.....	.....	.....	.....	.....	.....	.....
Refrigerators	2,738	33,462	604	4,983	129	5,611	1,977	31,701	243	8,632	186	.....	148	5,402
Dishwashers	7	80	.....	.....	.....	15	.....	.....	3	6	.....	.....	.....	2
Washers	3,211	24,375	350	2,520	449	3,292	3,205	24,846	766	7,516	541	.....	455	3,965
Ironers	1,240	7,537	99	479	69	621	599	4,186	39	360	53	.....	27	370
Vac. Cleaners	2,061	17,821	191	1,247	116	792	892	8,621	380	4,175	223	.....	60	710
Radios	7,193	55,759	898	6,923	726	5,319	5,353	38,519	1,248	8,195	1,077	.....	590	3,106
Mixers	515	4,441	58	510	60	699	552	3,726	285	2,132	124	.....	74	521
Cookers, Casseroles	.....	.....	34	212	10	161	65	475	10	321	153	.....	6	53
Irons	.....	.....	320	2,386	484	3,447	1,624	13,284	1,011	9,204	518	.....	374	3,329
Waffle Irons	.....	.....	125	1,122	143	1,022	601	4,029	317	2,289	177	.....	98	823
Toasters	.....	.....	166	1,540	192	1,243	789	5,728	703	4,455	580	.....	148	1,272
Table Stoves, etc.	.....	.....	62	423	183	1,272	585	2,863	907	6,304	.....	.....	361	2,352
Heating Pads	.....	.....	49	488	.....	.....	321	1,709	432	1,724	262	.....	58	268
Curling Irons	.....	.....	.....	.....	.....	.....	74	635	300	2,279	.....	.....	.....	.....
Coffee Makers	.....	.....	137	1,000	126	951	460	3,512	386	2,289	337	.....	109	1,136
Sewing Machines	858	11,004	17	160	.....	.....	.....	.....	.....	.....	74	.....	.....	.....
Clocks	.....	.....	.....	.....	125	876	608	3,732	295	2,267	235	.....	45	261
Fans	.....	.....	.....	.....	.....	.....	55	2,817	44	2,084	.....	.....	11	894
Floor Polishers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sun Lamps	.....	.....	.....	.....	6	21	19	248	2	51	6	.....	7	130
Reflector Lamps	.....	.....	.....	.....	141	841	.....	.....	1,009	7,152	666	.....	555	1,715
Misc. Lamps	.....	.....	.....	.....	.....	.....	.....	.....	1,474	9,199	1,888	.....	971	2,657
Yard Lights	.....	.....	.....	.....	50	490	.....	.....	.....	.....	.....	.....	.....	.....
Misc. Small Appl.	.....	.....	150	1,868	176	1,954	10,268	14,349	34	161	.....	.....	.....	.....
Total Dealers	1,400	.....	.....	.....	.....	.....	572	572	.....	.....	.....	.....	.....	.....
No. Reporting	.....	.....	.....	.....	151	134†	501	501†	.....	.....	.....	.....	.....	.....

* October Report was not available at time of going to press. † Arithmetical average number of dealers reporting since first of the year.

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. First report of year 1935 starts with Dec., 1934, and will be cumulative from that month.

[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Clocks, fans included under miscellaneous.

[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.

[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served. Comparative figures of same month last year indicates improvement.

[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory. Dollar value of appliance sales in June, 1935, is over 300,000 ahead of sales in June, 1934.

[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.

[7] Figures compiled by Electrical Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60% report.

The Parable of the Bogies and the Bonuses

OF all things, Electra dragged me to church the other Sunday and I found I had forgotten how effective a parable can be to illustrate a moral. Next day some of the problems of a poor salesman were poured into my ear. Somehow as I remember what the chap told me the thing shaped itself into a parable—the parable of the Bogies and Bonuses.

Chapter I

1. Behold, it came to pass that a certain young man labored at divers tasks and did work with vigor.
2. And he that was named *Boss,* did call the young man unto him,
3. Thereat he entrusted him with new tasks of great import.
4. Whereupon the young man did betake him forth among the populace and did urge them to use of the wares of his master.
5. And these tasks were called *Sales.*
6. But to him that was named Boss did come grave doubts and worriment.
7. Bethought he, should this young man have an evil spirit come upon him, so that he would do no labor without great urging, as young men are wont to do,
8. Then, methinks, great would be my cost and small my load.
9. Therefore must I put me in a *System,*
10. And it shall be called a Bogie and Bonus System.
11. And the young man that does labor for me shall be thus kept forever uncertain and worried, even as I was wont to be worried, but shall be no more.
12. For surely the young man of Sales shall know not whither cometh his living and that of his family,
13. And shall labor long and late seeking to fill yon Bogie and in reaching for yon Bonus.
14. He shall hurry from one customer unto another and shall acquaint himself to many but be familiar to none.
15. And the small user shall not merit his attention for verily he can shift for himself.
16. Thus shall my men of Collections and Complaints keep them busy also.
17. And great shall be the volume of *records* written by them,
18. Even unto the men of Sales who shall report verily upon every *suspicion* of a Prospect,
19. And this shall keep them from mischief.
20. And he that was Boss did recline in his chair that did swivel and did breathe a sigh of deep relief.

Chapter II

1. But it came to pass that the System that was called Bogie more oft was termed Buggie, and that which was called Bonus, it was called *Bonehead.*
2. And great indeed was the *worry* that it laid upon the young man of Sales.
3. For surely the young man of Sales toileth valiantly.
4. Cometh the end of the first year and the young man had fallen *below* his Quota,
5. For the going had been hard, and great tribulations had been visited upon him.
6. Then he that was Boss did shave the Bogie for the next year.

Chapter III

1. Because of a great *Boom* that befell the next year the young man of Sales did give unto his Bogie a beating,
2. And he did earn a Bonus that was as great *even* as the salary of the Boss himself.
3. Whereupon sayeth the Boss, *This* shall not do.
4. And the next year, behold the Bogie was *upped.*
5. And thus it continued year upon year.
6. Until one day great gnashing of teeth befell because the populace did revolt,
7. And great *anguish* came from Those Upstairs who did wear the Hats of Brass
8. For upon the wall did appear an hand writing in words of warning,
9. "For he that shall take care of the *least* of these his customers,
10. His shall be the glory of customers well *satisfied,*
11. And they that be *satisfied* shall become even as salesmen for their joy and happiness over Electricity,
12. And when votes are counted, lo, *these* may be counted upon also."

Chapter IV

1. Thereupon Those whose Hats were Brass, and he that was called Boss did go them into an huddle.
2. And from it *came* these questions:
3. Can it be, sayeth One, that we have become too *insulated* from ground in our cubicles raised into the firmament, high upon the umptieth floor?
4. Can it be that we have become *engrossed,* sayeth Another, in the digits and the accounts and records,
5. And have no knowledge of the men and women who *maketh* these figures wherewith we add and subtract?
6. Can it be, sayeth Another, that they *Downstairs* who meet with our customers, each day
7. And who live among them and associate with them after hours,
8. Yea, verily, can it be that readers of meters, and collectors of bills,
9. And they who jump counters, and she who *answereth* phones, and they who climb poles with spurs and who wear safety belts,
10. Can it be that they also *think,* and in thinking *talk?*
11. And those whose living cometh from Sales, sayeth Another, would not they labor as well as these others, were they to be paid in the same manner,
12. And because their hearts were happy and their *minds* at rest,
13. Would not they *reflect* that spirit among the multitude
14. And make friends of *those* who now distrust us?

Chapter V

1. Behold he that was *mightiest* did rise to proclaim:
2. *Service* shall no longer be a necessary evil,
3. But instead, oh my people, it shall become an honorable *vocation,*
4. And those who sell shall *also* be men of Service
5. And those who *serve* in other labors shall do so with goodwill
6. And he that is Boss shall not waste of his energies *justifying* his existence nor that of his workmen,
7. But they shall be counselors and

advisors of them who are called *Customers,*

8. And even though results be not apparent upon a balance sheet

9. Lo, we shall be building *anew* upon strong foundations.

10. And he who buildeth does so with pain and travail,

11. But he who *destroyeth* can do so quickly.

12. Thus we who have *builded* in the past shall rise from the destruction that has been visited upon us,

13. And we shall build *anew* and stronger,

14. Because this time we shall build upon the strength that lies in *men*

15. And not on material things of Property alone.

Bill Jones Speaks + + +

about Piano Tuners Pulling Teeth

"JUST look that over and let your chest swell with pride as you learn of the touching solicitude for the farmer and how your government spends sleepless nights devising methods of relieving him of his labor—and of his vote," sniffed the manager as he tossed a pamphlet and a bunch of questionnaires over the desk to Bill Jones.

"What," said Bill, "is the nostrum prescribed by the Planless Planner now? Oh, I see, 'Rural Electrification; Electricity on the Farm,' etc. Well, while the AAA is curtailing production on the farm it is certainly fitting that there should be at least one other Authority egging the farmer on to increased production. That principle is becoming firmly established.

"Surely we should wish that our rural friends have all modern facilities at hand to make easier that marvelous constructive inspiration, the killing of little pigs. And what intelligence promoted by the best-brains trust is so intriguing as the one of electrocuting piglets? Certainly no adolescent porker can be found so lacking in patriotism as not to thrill to the ecstasy which will come with the knowledge that the Authority translating him to wherever good little pigs go when they depart this existence, is 220 volts from his farmer-owners own Government subsidized plant. He assuredly will be a very unappreciative and a very degenerate swinelet whose last squeal is other than a paeon of joyful pride at the thought that his Uncle-in-law-Sam loaned the money which made this miracle possible."

"For years," said the Manager, "every power company has pushed rural electrification far more vigorously than was justified by any principle of economics. And now the government has suddenly discovered something which has been going on rapidly and orderly for decades, and so it creates the REA."

"Yes," mused Bill, "that is a habit of small horse and buggy minds. They suddenly stumble on something which being new to them must, therefore, and perforce, be entirely novel to everybody, so they grab it up and make it their own baby and pursue it with the energy and enthusiasm of having invented it. Nature's way is the way of evolution, but Nature is an old fogey and the bright boys must make the headlines. And the local administrators must make a showing or their chiefs in the capitol will be riding them."

"But, they don't know anything of consequence about any subject and refuse to listen to, or associate with, anyone who does. If you wanted a tooth pulled you wouldn't send for a piano tuner," said the Manager.

"No, I wouldn't; but the big chief of the brain trusters would. You see the piano tuner is expected to tackle the problem from a different angle. He would use new and inept tools. If a tuning wrench is good for tightening piano strings, it naturally follows that it is the long-awaited instrument to remove teeth.

"A tooth pulling when done by the dentist hurts the patient, and so the voter whose tooth is aching is in the frame of mind to listen to and believe in the medicine man whose knowledge is little but whose promises are big.

"But I am afraid that your criticism lacks the vision of our fearless leaders of planless planning. Pause and give thought to the abundant life which will come to the pre-government stamped potatoes lying contented in fields electrically plowed and sowed. Wires will be laid underground to warm the earth so that little potatoes may quickly grow up into big ones. But, no farmer will need to anesthetize his conscience or to go to the penitentiary because he sold a half dozen bushels of spuds to his neighbor in contravention with divinely inspired economic planning. No necessity for bootlegging potatoes across the fence line. No longer the need of keeping the children home from school to watch and warn against the stealthy approach of Federal snoopers.

"I, Bill Jones, being not a New Dealer and therefore of sound mind, in possession of my full faculties, am freely giving to the potato raisers a formula which will solve the potato problem. No government stamps, no $1,000 fines, no incarceration in Atlanta, no Blue Eagle-style container. When the electrically warmed spuds have reached maturity additional energy will be caused to surge through the underground system to the end that the 'murphies' may either be baked or french fried right in the ground. And french fried and potato chips don't come under the paternal hand of the AAA, the SEC, the PWA or the BUNK——"

"Yeah! How about the processing tax? And——"

"——and the temperature of the water-table will also rise (think of the planted hills in the Half Moon Bay region) so that at all times it will approximate the temperature of the land. And this will not only do away with the now too-frequent fogs which are a menace to shipping but which also are guilty of obscuring our well-known scenery. Let's stand united behind the great project."

"In the meantime," sighed the manager, "the government is simply endeavoring to put my company out of business by a process of attrition. Where is it all going to end?"

"Well," said Bill, "there was once an Oriental philosopher named K'ung-fu-Tsze (Confucius to you) who said: 'A small stone, in a large cask, makes a great noise.'"

C.R.E.A. Reports Good Work Done and Planned

REITERATING the thought that the work of the California Committee on the Relation of Electricity to Agriculture was meaning more and more each year to the farmers of California, the utilities and the university experimental stations participating in its findings was given at the meeting in San Francisco, Oct. 26. Alex Johnson presided in the absence of Chairman Walker. Work of the committee for next year was to be determined by a special committee appointed for the purpose of establishing budgets and working out the future program. Indications were that the work would be enlarged and increased during the next year based on the number of practical results derived from the work of the past year.

Professors W. B. Herms and Joe Ellsworth made a report on the investigation of grape leafhopper and the plume moth control by means of monochromatic light which indicated success for this serious problem of insect destruction. Field investigations during the past two years have shown destruction of leafhopper and preservation of crops of grapes in all test vineyards. In other vineyards outside the test area dying foliage had left grapes unmarketable due to lack of sugar content because of the depredations of the leafhopper, whereas vineyards protected by the light traps were satisfactorily guarded.

On artichokes results in checking the plume moth have been even more spectacular. The second season's tests substantiated the previous year's tests in which worminess was reduced in the test plots to 3 per cent. When allowed to revert back to original conditions worminess increased from 20 to 25 per cent. Use of one trap burning nightly throughout the year to every two acres in a test plot is preventing the moth from building up in population. It is proposed that investigation be carried on further with tomato hook worm, corn ear worm and the soldier bug during the next year.

Professor B. M. Woods described the classification of manufacturers and of the controls both pneumatic and electrical, which are available for use in air conditioning. He showed the necessity for automatic control as being one of the primary needs of the business. Where operation is left to manual methods of control, use of the apparatus is often discontinued, he pointed out. Cross-indexing of this information will be of value to everyone having to do with this type of installation.

Spectacular results in the growing of tobacco and tomatoes in a nutrient solution, heated by means of soil heating cable, with control of temperature in surrounding air, was made by W. Gericke and illustrated with lantern slides. Further experiments in this direction are being conducted.

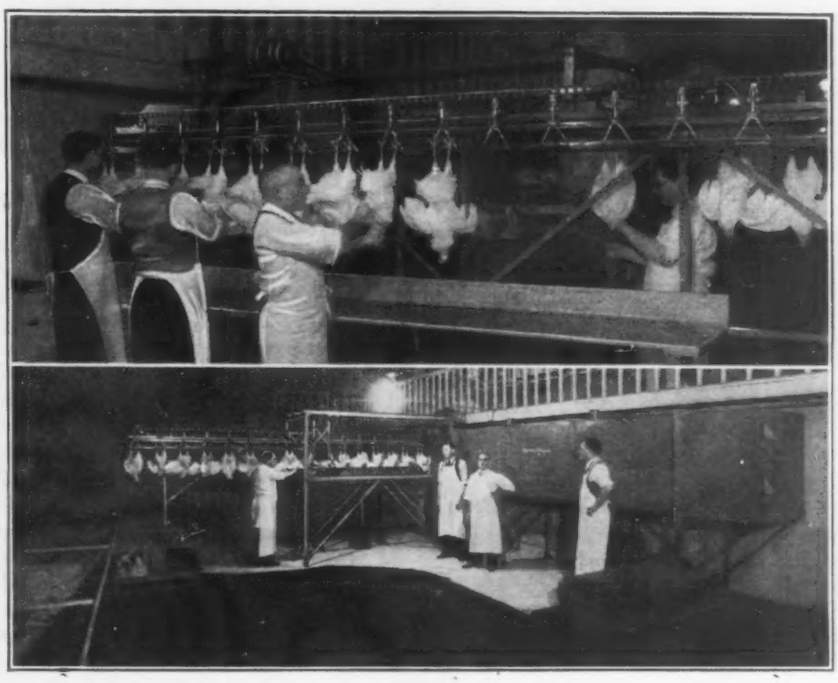
An investigation into the effect of air movement and moisture on the freezing temperature of oranges was reported by Syd Cameron, whose paper was read by Secretary B. D. Moses. Further laboratory tests to determine the effect of humidity in temperature were proposed. It was also discussed that field tests of the use of motor-driven propeller fans in orchards be made to determine the effect of air mass movement in the prevention of frost.

J. R. Tavernetti reported on a study of cooperative pumping plants conducted in the Santa Ana vicinity in southern California, where a number of farmers group together to share the costs of pumping.

Because of the shortness of time B. D. Moses presented his paper, "Electric Tractor," and a diagram for a proposed machine although no discussion was possible on the subject. The report of the membership committee by George Tenney was read by Victor Hartley, suggesting addition to the membership among farmers in each region where a C.R.E.A. meeting is held.

Wholesale Electrocution

Now comes the "electric chair" for chickens. It is a machine designed to facilitate the preparation of poultry for market by killing them painlessly, cleaning them and preparing them for easy plucking. The fowls are put head down in the machine with their feet clamped to an endless conveyor. As the belt moves along, the head of the bird contacts a highly charged electrode, then passes before a revolving knife which decapitates it, after which it drains for a short period. Then the birds move into a steam chamber where they are subjected to jets of low pressure steam and compressed air which loosen the feathers and open the pores so that plucking will be made easier. The capacity of the device, two views of which are shown below, is 750 birds per hour



(Above)—The two plants at the left were raised in the commercial type of greenhouse while the three at the right were raised in the insulated greenhouse described in the article. (Below)—Interior of the new designed greenhouse showing the Mazda lamps and reflectors used in supplying heat and light

Lighted Greenhouse Speeds Flowering of Plants

A new type of insulated greenhouse using Mazda lamps as a source of heat and light may completely revolutionize greenhouse design and practice as it is three times as efficient as the ordinary greenhouse. Designed and constructed by engineers at Nela Park, the house is built similar to a large refrigerator. The frame was covered both inside and outside with galvanized steel sheeting with lapped and soldered joints on the outside and lapped only on the inside. The space between the inner and outer walls was filled with dry sawdust packed tightly to give in effect a 6-in. wall of insulating material on the sides, floor and roof with the exception of the latter and the south side of the building which were occupied by windows. The window section consisted of eight ordinary storm sashes each glazed with two glasses. In order to admit as much sunlight as possible during the winter months when the intensity is lowest, the glazed sashes were pitched at an angle of approximately 52½ deg. to the horizontal.

Supplying heat and light to the greenhouse were two rows of five Mazda lamps each extending the entire length of the house. During December, January and the first three weeks of February 500-watt lamps were used and after that date they were replaced with 300-watt lamps. Units were spaced on 3x3½-ft. centers leaving 1½ ft. of space between the back wall and the first row of lamps. Lamps were counterweighted on suspensions so that they could be raised or lowered to accommodate the growth of plants on each part of the growing bench. The heat of the room was thermostatically controlled between a minimum of 60 deg. and a maximum of 100 deg. F., the lamps being equipped with standard RLM dome-type reflectors.

Several species of plants were tested in the new greenhouse and in a standard greenhouse used as a control house. Varieties included the cineraria, sweet peas, snapdragons, poinsettias and gardenias.

With the longer day in the insulated house the plants were brought into flower in a short time. Fuchsias and snapdragons were brought into flower during the last week in January, while begonias flowered in both houses, but produced a much larger plant in the insulated house. Calceolaria opened in the new house on Jan. 24, while the first flower appeared in the control house one month later. Sweet peas flowered two weeks earlier in the insulated house. Cineraria and poinsettia flowered first in the control house due to the fact that they were apparently short day plants and the long days produced by additional light each night completely inhibited flowering. Poinsettias grew to more than three times the original height in the insulated house, but while it flowered did not grow appreciably in the control house. In the practical application of such a greenhouse it is therefore essential to avoid the varieties of plants which flower only on short days.

Cost of operation produced an interesting comparison with present practice. A 19x8-ft. greenhouse can be heated and lighted during the coldest winter months at an average current consumption of 18 kw.-hr. per day, which at 2 cents per kw.-hr., amounts to approximately 36 cents per day. Figures supplied by a greenhouse manufacturing company indicate that approximately three tons of hard coal would be required to heat an ordinary greenhouse of these dimensions during the normal winter season. With coal at $8 per ton it would cost approximately $20 for coal in this period or an average of 17 cents per day. Although electric heating is more than twice the cost of coal for steam heating, the difference is more than compensated by the greatly increased growth and flower production in the case of the electrical method. In addition, considerable cost for labor of firing the steam boiler must be added to the fuel costs while the electrical method of heating requires no attendants whatsoever.

The new type of greenhouse was constructed for an approximate cost of $350 which included 4,360 lb. of sawdust, almost 12 per cent of the total cost of the building. The foregoing figures do not include labor for construction, costs of cement or other material.

The new design is believed to offer many advantages to the ordinary householder who wishes to grow a few of his favorite species of plants for cut flowers during the winter months and to the commercial grower who wishes to force flower production rapidly for special holiday seasons. It is designed to heat economically and this same low heat loss method of construction greatly restricts gaseous exchange with the outside air and favors holding the higher concentrations of carbon dioxide essential to plant growth. Humidity, however, may be increased but can be held down by planting in pots instead of soil and restricting the water supplied to the plants. From previous studies it is found that daylight supplemented with four to six hours of artificial light each night using Mazda lamps produces the most rapid growth and development of a number of plants. In this type of greenhouse it is found that the lamps burn approximately four hours each night so that in practice the ideal amount of light is supplied. It is anticipated that this design will make possible larger profits to the growers and lower prices to the consumers.

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• "As Told From Your Side of the Fence"—Electric Power for Farm Pumping,—is a powerful, testimonial type of advertising brochure recently prepared by the advertising department of the Southern California Edison Co. Ltd. Answering the question on "what kind of power shall I use for pumping" are the statements of actual farmers whose pictures are shown and whose letters reproduced over their own signatures. In their own strong words of conviction they tell of their grief with gas engines or other competitive forms of power. Throughout is featured the freedom from worry and need for attention which an electric motor gives over prime movers of other types. Near the back of the booklet is a suggestion that pumping costs can still be lowered by use of an irrigation reservoir. There follows a summary of some of the factors that a farmer can forget when using electric power. Another page gives a few points to check when water costs appear too high. A graphic table showing how Edison pumping rates have been reduced 30 per cent since 1921 is next given.

Goodwill Building + + +

"With public sentiment nothing can fail; without it nothing can succeed; consequently he who moulds public sentiment goes deeper than he who enacts statutes or pronounces decisions."—Lincoln.

Convince Public That Officials Are Human

1 I believe it is safe to say that no official of any power company inherited his position, but that every one, whether college educated or not, worked up from some minor job. There is hardly an average individual who does not feel more tolerant toward a successful person when he knows that success was gained only after a long struggle and by hard work. It is only human nature for such persons to find comfort in the fact that those on top had many difficulties to surmount and that even now they are faced with many of the same problems as they themselves. No doubt many consumers felt more kindly toward one of our big power executives who died recently, when they learned that at one time he had served as a janitor.

Now it seems to me it might help to build goodwill, if the power companies, in their monthly publications issued to consumers, would give each month a brief history of one of their officials, laying particular stress on any humble beginnings. A snapshot photograph of such officials, showing them with their children, their dogs, on a fishing trip, or engaged in some other hobby, might be published with the article, to give it a more human touch.

Every mother who reads these articles perhaps will feel that her boy may have a chance to someday become an important utility man. The articles might be entitled "Let's Get Acquainted" or "The Men Who Serve You."—*C. A. G.*

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Goodwill Building Is Three-Party Problem

2 Public and utility relations are in reality a four point responsibility — utility stockholders, management, employees and last but not least the all important consuming public. An analysis will prove the interests of each to be identical. Quite obviously a close harmony between these four principals is not alone desirable but indispensable in the proper discharge of the obligations of one to each other. Company management together with their employees are the active agents in this alliance; the management responsible for the formulation of plans and policies; the employees interpreting them in terms of action.

Technical knowledge and sound business principles and ability, together with a sincere and sympathetic understanding of problems pertaining to the consuming public are a prerequisite of both management and employees. The stockholders should likewise assume and share in this responsibility.

Owners, management and employees of most public service corporations are fairly unified in their desire to conscientiously serve the public. In them rests a joint responsibility in the dissemination of information and service in controversion of insidious individual and group forces working in self interest to deliberately misinform, mislead and otherwise disrupt a great and vitally necessary industry. Whatever steps are taken in correction of these evils must result from the best individual and collective intelligence that can possibly be brought to bear on this important matter to regain, re-establish and hold the full confidence of the public.—*R. V. P.*

Rules

TO intensify interest in the problem of building customer goodwill ELECTRICAL WEST will pay $2.50 for each idea or suggestion deemed worthy of publication. In addition all suggestions received during the period from November 1, 1935 to October 1, 1936, will be eligible for $50 in awards to be given by ELECTRICAL WEST, the P.C.E.A. and the Northwest Electric Light & Power Assn. These awards will be based upon the goodwill building merit of the idea, its practicability, adaptability and originality. The judges will be officers of the two associations and the editors. The awards will be $25, $15 and $10 for the three suggestions ranked first, second and third by the judges. In the case of ties duplicate awards will be made.

Suggestions should be limited to 400 words, preferably less. Composition does not matter as manuscripts will be edited for publication by the editors. Ideas will be published over a nom de plume, provided the author indicates that such is his or her wish. They should be sent to the editor.

Minimize the Necessity For Delinquency Cut-offs

3 On numerous occasions many of which seem to be unwarranted, a consumer's lights are cut off due to delinquency of payment perhaps but a few days beyond the become quite irritable calls in to inquire for service and to explain his predicament, perhaps feeling that he or she has been partially to blame for the lapse in payment, mostly due to some minor negligence on their part, or their inability to make the payment in the required time because of sickness, absence from home, or other pressing obligations which do occur from time to time and must be met without delay. Perhaps it is to the customer's inconvenience to make his remittances at some certain day in the month which is several days or more beyond the specified time.

In many instances the consumer calling in reports that his lights have been cut off for non-payment presumably, yet he has the receipted bill showing that he is paid up to date, the bill having been paid the previous day and perhaps at another office. Such embarrassing instances are constantly being faced by the secondary trouble man or trouble shooter who is called upon to resume service and becomes the target for any blunt outbursts of anger and fury which may have been aroused in this once reposed consumer of ours. Above all, the troubleman must with patience and tactfulness explain the error and assure the customer that such a recurrence will try to be avoided.

Certainly to allow 15 days grace beyond the stipulated 10 or 15 days from the date of presentation would not bring about too great an inconvenience upon the company and would tend to eliminate petty excuses commonly used by a few of the customers. Such an extension would eliminate many of the above cited instances, and would do much to inculcate tolerance and goodwill on the part of the public in lieu of breeding contempt and illwill. It would do much toward lifting a great responsibility from the shoulders of those who are constantly in touch with the public, and who are woefully lacking at times in measures which tend to create and build up public sentiment.—*R. C. B.*

With the Trade Associations + + +

[An Exchange of Plans and Ideas for Assisting the Industry in All Branches to Solve Some of Its Problems of Trade Relations and Business Ethics]

Wholesalers Coronado Convention Sets Record

THE largest and most successful meeting in its 27 years of existence was held by the Pacific Division, National Electrical Wholesalers Association at Hotel Del Coronado, Coronado, Calif., Oct. 28, 29 and 30, with an attendance of 125. Not only was the San Diego Exposition a drawing card to increase attendance but also the features presented by the "Ben Franklin Club" drew a large attendance of manufacturers and manufacturers' agents.

After the executive session for members on Monday afternoon, the general open meeting was held Monday evening at 8:30, President Ross Hartley presiding. Elwood P. Bailey, vice-president, California Pacific International Exposition, talked on the exposition and what was to be seen there. Frank Jordan, Pacific Coast Supervisor, air conditioning department, Westinghouse Electric & Mfg. Co., followed with a talk on air conditioning. The meeting also honored Newt Graham as the oldest member of the N.E.W.A. on the Pacific Coast by presenting him with a silver plaque.

A joint meeting of members and manufacturers opened Tuesday morning with a program provided by the Ben Franklin Club. R. E. Emhoff, merchandise sales manager, Westinghouse Electric & Mfg. Co., presented a paper pointing out the profit possibilities to wholesalers from the proper use of manufacturers' sales helps in a talk entitled "The Value of Electrical Merchandising to the Wholesaler." He emphasized the need for showmanship in selling.

Charles Meier, Westinghouse Electric & Mfg. Co., stressed the importance of selling known quality products, backed up with a plan to sell such products, in a talk "Manufacturers Are Supporting Wholesalers in Sales Promotion and Advertising." He stressed the fact that advertising builds acceptance by reducing sales costs. He listed the forms of help manufacturers provide, including national magazines, creating desire among consumers; newspapers, also to reach consumers; trade magazines, to reach retailers and contractors with news and information on the use of promotional material, exhibits, demonstrations and shows. He also listed selling plans, promotional material, window displays, counter displays, store displays, folders, catalogs, selling kits, cut-away samples, sales kits and promotional man power in the field. He emphasized the importance to the wholesaler of making more effective use of these sales helps. He also stressed the fact that abundant power is now available and must be sold.

Richard A. Buxby, South Pacific Division, appliance department, General Electric Co., presented a story of "Science of Seeing" and effectively pointed out the opportunity for greater business and profits in the lighting field.

The outstanding paper of the convention probably was that presented by Harry Bussman, vice-president, McGraw Electric Co., and vice-president, Bussman Mfg. Co. His subject "Master Salesman—What Magic Does He Use?" Mr. Bussmann declared selling must be expository rather than merely boastful. He emphasized the importance of training salesmen, developing their personalities, teaching them what and how to say the things which are needed to be known to sell a product.

The session was closed by the presentation of a clever skit "Before and After Taking," presented by the Ben Franklin Club, which also provided the convention with a printed program, the first of its kind.

Tuesday afternoon was devoted to golf at the Coronado Country Club with a stag social session in the evening.

W. S. Greenfield, president, Allied Industries, Inc., opened the Wednesday morning business meeting with a talk on "Selling Quality Merchandise to Price Buyers." This paper was prepared jointly by a number of manufacturers and manufacturers' representatives.

Charles Goodwin, General Electric Supply Co., San Francisco, presented the problem paper "Unethical Competition" which had been previously presented at the San Francisco Conclave of the Pacific Coast Electrical Assn. Considerable discussion followed both of these papers.

Wednesday afternoon was devoted to golf, with the banquet Wednesday night, Glenn Shaver acting as toastmaster. Albert Elliott traced the history of each cup and made the presentation of the Percy Booth miniature trophies. The Manufacturers Cup was won by W. P. Tapping, manager Los Angeles office, Cutler-Hammer, Inc. Charlie Goodwin won the Copper Cup for wholesalers, being especially proud of the fact that his was the second generation to find his name placed on the Copper Cup.

The next meeting of the association is scheduled for Feb. 13, 14 and 15 at Del Monte.

Circuit Breakers

Every once in a while someone says something in a few words that tells a complete and effective moral. There is nothing more than can be said. From time to time as we hear these they will be run under this heading. If you hear of any you think we should have drop us a line.

"Consider the electrical contractor. He is as a banana. Every time he leaves the bunch, he gets skinned."

—Brick Hunter,
Accountant for Electrical Contractors in Southern California.

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• LOS ANGELES ELECTRICAL CONTRACTORS branch of the Southern California chapter, N.E.C.A., now issue from time to time a bulletin or news sheet giving pertinent information regarding local activities. The sheet is edited by the membership committee.

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• A TELEGRAM to each member each week is the unique method by which Ed R. Reynolds, president of the Estimators Section, Los Angeles, announces the meeting each week. Mr. Reynolds is head of the Electrical Division at the Frank Wiggins Trade School and has his telegraphy classes transcribe the telegram to each member each week. These telegrams, printed out in regular form, are then mailed to the member in a regular envelope.

Business Development Problem Papers + + +

P.C.E.A. Prize Contest Rules

Get Your Share of the $680 Prize Money Offered For the Best Solutions to These Eight Problems

PRESENTED in this issue of ELECTRICAL WEST are the eight problem papers (together with supplementary discussion of each) that comprised the program of the San Francisco and Los Angeles meetings of the Pacific Coast Electrical Association. For the best solution to each problem the P.C.E.A. is offering the following prizes:

First Prize.....$50
Second Prize $25
Third Prize $10

Every member of the Pacific Coast Electrical Association, except those listed below, is eligible to compete and encouraged to submit solutions in accordance with the following rules:

1. Contestants are not necessarily limited to the items or the situations presented by the authors of the problem papers. Solutions must, however, remain within the general scope of the problem. Originality and initiative will be given due credit in judging the solution.

2. Solutions must not exceed the following limits:
5,000 words for engineering problems
2,500 words for commercial problems

3. Solutions need not cover all of the phases of the problem presented in the problem paper. Solutions to one or more phases will be accorded full consideration by the judges.

4. Contestants may use the data and situation prepared by the author of the problem paper, may base a solution on a specific situation, or may assume a hypothetical situation if consistent with fact and has a practical application to the problem presented.

5. Solutions must reach the office of the Pacific Coast Electrical Association, 601 W. 5th St., Los Angeles, California, not later than midnight March 1, 1936 to be eligible for prizes.

6. Papers will be judged primarily upon their value to the industry in solving the problem. Neatness, originality, initiative, and practicability will be given due credit by the judges.

7. Prize papers will be published in ELECTRICAL WEST as soon as possible after the judges have reached a decision.

8. All members of the Pacific Coast Electrical Association are eligible except:
Officers of the Association and members of the Guidance Committee,
Company executives, department heads, district and division managers.

9. Papers will be judged by the Guidance Committees of the operating Economics and Business Development sections respectively.

By presenting the complete problem papers and discussion of each in this issue of ELECTRICAL WEST, the P.C.E.A. gives each entrant an equal start. Get into the Contest!

Inadequate Wiring Throttles All Progress

THROUGHOUT both the Los Angeles and San Francisco conclaves there was a common recurrence of the statement that one of the big obstacles to the greater sale of electrical appliances and the greater use of electrical energy, is the inadequacy of the vast majority of existing wiring installations. The various thoughts which were expressed are set down below in the form of the elements of a problem and the prize-winning papers will be those which offer the most tangible, workable suggestions that will tend to solve any part, or all, of this problem. In other words, a workable plan to overcome some one part of the problem will hold greater value in the eyes of the judges than will a rambling, theoretical discussion of the problem as a whole.

Problem No. 1,

is "How shall we bring wiring, both in old and in new homes, up to a reasonable adequacy for convenient use of electricity?"

It will be observed that this problem actually divides itself into two separate and distinct branches—

(A) New homes,
(B) Old homes,

and that each requires an entirely different manner of treatment.

NEW HOMES

It has been suggested that because the wiring is hidden behind the walls it has lacked an equal appeal to popular realization of how important it is to the comfort and convenience of the home.

How can the importance of adequate wiring be so dramatized that it will be demanded in all new homes?

How important a factor is the architect in obtaining an adequate wire layout?

What proportion of new homes clear through an architect's hands?

What influence do the architects' standards exert upon homes built without the aid of an architect?

It has been suggested that lack of standardization in local electrical regulations necessitates the manufacture of several different types of some pieces of equipment intended to serve the same purpose in different communities. This necessitates wholesalers and contractors carrying needlessly expensive inventories and is one of the greatest contributing factors to wiring costs which the customer deems prohibitive. How can a general standardization be effected to eliminate this unnecessary cost factor in wiring?

How can electrical contractors and home builders best be made to realize that the main service determines the capacity for growth in any electrical installation and that no main service conduit should be smaller than 1½ inch, or in a knob-and-tube job no main service should be less than three No. 4 wires regardless of how oversize this may seem to be for serving the original installation?

What program can you suggest to ally the architect, the builder and the realtor with the electrical industry in the cause of adequate wiring?

How can the architect, builder, and home owner best be made to realize that the city and county wiring requirements enforced by local inspection departments represent the very minimum consistent with safety and make no pretense of providing adequacy? In other words, how can the public be made to study their electrical needs and demand an installation to meet those needs rather than accepting as suitable the minimum installation that will comply with local requirements?

How can the public be made to realize that the difference between a "minimum" installation and an adequate installation represents less than 2 per cent of their total building cost of the home, and that this slight increase is an investment in comfort and convenience which will endure throughout the life of the home?

Old Homes

Everyone, without exception, is in need of additional outlets and switches, better lighting, in fact, more adequate wiring generally throughout his home. Yet these needs most frequently are met by slip-shod, makeshift methods such as multiple outlets, plugged into a single convenience outlet, and silk cord tacked around the baseboard or running under rugs.

How can the public best be made to realize the double disadvantage of these methods?

(1) The hazards both of fire and of personal injury; and (2) the inefficiency resulting from voltage loss due to overloaded circuits and to long runs of "extension cord" wiring.

Which is the biggest factor in retarding adequate wiring in old homes?

A. The cost of rewiring.

B. Lack of realization on the part of home owners of the dangers and inefficiency of makeshift substitutes.

Inadequate wiring has been called the bottle neck which retards the greater sales and use of electrical appliances. Which would you say is the most effective way to attack this problem—

A. To sell the enjoyment of electrical appliances so thoroughly and completely that the installation of wiring properly to serve this equipment will follow as a natural course of events, or

B. To assume a popular demand for appliances and to stress inadequate wiring as an evidence of obsolescence in a home, as it prohibits modern standards of living.

How can the hazards of inadequate wiring and makeshift wiring be brought forcibly to the attention of the public without creating a fear that would react against the use of electricity even when properly installed?

How Increase Domestic Use of Electricity?

PERHAPS the most extensively discussed subject of the two conclaves was that of Domestic Load Building. Many suggestions for solving this problem were offered from the floor but as it was not the purpose of the conclaves to obtain a solution, but rather to develop the problem in all of its aspects so that it could be submitted in complete form to the industry and the solutions offered as contest entries, the entire discussion has been reduced to a problem paper which is submitted herewith.

It is hoped that many very valuable suggestions will be submitted under this problem and all contestants are asked to bear in mind that a workable solution to any portion of the problem is more to be desired and will hold greater value in the selection of the prize-winners than those papers which discuss the entire problem in generalities without offering any practical sales ideas.

Problem No. 2,

is the same as last years—
"How shall we increase the domestic use of electricity?"—a problem that is constantly with us.

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How can the utility so use and direct its own sales efforts to get the greatest volume of business?

What things should the utility sell direct?

How far can the utility economically afford to go in promoting dealer sales in such a way as to get the greatest volume for the dealer and accomplish the greatest load building for themselves?

How can the utility and the rest of the industry increase the consumption of the so-called "minimum user" of electrical service?

How can dealers be induced to make greater use of the prospect lists available to them through the utilities?

Dealers face difficulty in obtaining capable salesmen and lack ability properly to direct their sales crews.

How can the industry assist the electric retailer in building better sales organization?

Manufacturers should be alert in designing their merchandise so that it will have popular appeal.

Would the sale and use of electrical appliances be more greatly increased if appliances were made (A) more beautiful, or (B) more utilitarian?

How can all of the employes of the electrical industry most effectively assist in selling and thereby promote their own welfare?

How can the electrical contractor be made to realize that the sale of appliances creates wiring demand and is therefore of direct interest to him?

How can the electrical industry best sell the building industry on up-to-date uses of electrical energy and appliances?

What effect has the non-standardization of cords and attachments plugs upon the use or non-use of appliances, and if this is a factor in retarding the use of appliances how can the condition be corrected?

How can we create a popular desire to bring back into use the many stored-away, idle electrical appliances?

What can be done to further stimulate sales activity and consumer acceptance on major appliances?

Do the differences in service policies of the contiguous utilities cause consumer inconvenience and dissatisfaction which retard the general use of electricity?

Whose responsibility is it to see that a newly purchased piece of heavy duty electrical equipment is delivered in good condition, properly set up, and correctly connected in the customer's home?

What can the electrical industry do to popularize the use of electrical table appliances in the home?

What effect upon the general use of table appliances have the following?:

1. Lack of adequate wiring and sufficient convenience outlets.
2. Lack of proper storage space for appliances.
3. Lack of progress in designing to conform to modern tendencies.
4. Lack of recent new developments in appliance fields.

How can the four branches of the industry profit to the fullest extent possible from the promotional funds annually expended by the utilities for the purpose of spreading appliance sales and building load?

Surplus Power Calls for Industrial, Commercial Uses

THE problem of Industrial and Commercial Load Building is so extremely extensive in scope that it cannot be broken down into a single detailed problem paper. Because the prize contest is restricted to four problems we cannot present separate papers on each of the important sub-heads which come under this general title so the discussions presented at the conclaves, dealing with this subject are presented herewith merely as a guide to participants interested in this phase of the business. The fact that we have not specifically touched upon any particular present or potential use of electricity in these fields does not mean that they were deliberately overlooked. Contestants are invited to submit papers upon any phase of commercial or industrial uses of power. The prizes will be awarded to the three papers offering the most practical solutions in the form of workable plans for developing the market to which they apply.

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How much additional power can the existing market absorb?

How much additional power can existing customers utilize through the development of new applications of electricity to their problems?

What new industries could be developed within this territory without creating damaging competition for existing customers?

How can industrial and commercial customers be sold the higher intensities of illumination which they need for increased efficiency?

Which is the more desirable load—a few extremely large power-consuming industries on very low rate schedules, or a multiple of smaller industries on higher rate schedules?

If the possibility of further industrial electric sales exists at the present time, what is holding back such sales—are industrials not sold on electrical methods, or are electric rates too high to meet competition?

Whichever is the reason, what method should be followed to overcome it?

Are the men engaged in the sale of industrial equipment to the ultimate consumer sufficiently informed regarding the product, and trained in the best methods of selling?

Is the "demand charge" form of rate schedule driving customers to competitive forms of power? If so, this has great bearing not only on the retention of existing customers, but also upon the success of sales efforts among potential new customers. If this condition exists as a handicap, what can be done to correct it?

Would there be any loss of revenue if "demand charges" were modified?

Problem No. 3,

again like last year, is that of "How can we increase the commercial, industrial and agricultural uses of electricity."

What markets not now effectively saturated may be developed to maximum mutual advantage by a more reasonable degree of coordinated effort between representatives of the utilities and of the manufacturers?

What are the possibilities for the development of air conditioning for the control of temperature and atmospheric conditions in manufacturing and processing operations, and how can these possibilities best be developed?

One paper presented at the San Francisco conclave related the problems of the motor industry in a manner which does not permit of reduction to the outline form followed above and is therefore given herewith in full as it is believed to have a very definite bearing upon the general subject.

Problems of the Motor Industry

Problems of the electrical industry, from the motor manufacturer's point of view, may broadly be divided into two general classifications:

1. Those dealing with the design, manufacture and application of motors, and
2. The marketing or distribution and sale of the product.

There is no gainsaying the fact that the science and art of motor design, manufacture and application, since the turn of the century, has kept abreast of the times and even ahead of the times, since new developments have opened new fields. The very life and success of the manufacturer depends upon the sale of his product at a reasonable profit. This paper will therefore concern itself with the problems affecting the sale of motors and control.

The growth of the motor industry and the expansion of its field of operation has been due to the initiative of the various factors, who have taken a direct interest in this business. As a starter, there was, of course, the motor manufacturer who pioneered the electrification of shops which were powered by steam engines, through a maze of line shafting and belting.

His efforts were later supplemented by those of motor dealers and specialists, who because of their numbers, nationally, contributed greatly to the increased electrification of industry. Changes from one central motor drive to group drive followed, and with the perfection of design and manufacture of motors, the next step was to individual machine drive.

The natural growth of our industry, as in the case of many others, was accelerated at the time of the war and brought out the individual motorization of machine tools, pumps, blowers, compressors and the like by machinery

manufacturers, all of which introduced additional elements and complicated the distribution problems, which occupies the attention today of the motor manufacturers, as well as others in the business.

Reasonable profit is essential to the success of any organization, and the determination of profit demands an accurate knowledge of the cost of doing business and recognition of the field in which each factor has its place. The problem of determining costs, on a sound basis, nationally, is of vital importance to us all.

Competition is recognized as being the life of trade, but it must be of the constructive and not destructive kind. Anyone can cut price—it is the simplest and easiest means of securing orders, but cutting prices reduces profits, first of all. Retaliation merely increases the loss to industry and eventually results in the production of inferior products or the entrance of the receiver. Price cutting does not always take the form of lowering the selling price of an article, but is accompanied by providing special features without increasing the selling price.

Prices of standard motors are based on manufacturing costs of standard construction. Any modification takes them out of the production line and automatically increases their manufacturing costs as well as the cost of the standard line. Modifications frequently encountered include special shaft lengths, diameters and machining; special types of end shields and machining, unusual close limits not necessary in general purpose motors; electrical modifications, such as requirements of off-standard voltages, quiet operation, etcetera.

The result of standardization is well exemplified in the case of distribution transformers. Through the cooperation of public utilities with manufacturers, certain ratings were standardized as to capacity and voltage, which reduced the manufacturing cost and selling price of the selected standard ratings. This was relatively simple of accomplishment due to the comparatively few purchasers involved. The problem of the motor manufacturer is not quite as simple because of the tremendous number of purchasers affected and the great diversity of applications and modifications involved. These demands are growing and cannot but result eventually in higher costs to all classes of buyers, which in turn will hinder the continued growth of our industry.

Let us consider now, the competition of the motor industry with other methods of driving machinery—gasoline engines, gas engines and diesel engines. Along with the cost of the motors, we must take account of the power costs. The initial price of the motor is but a fraction of that of an engine, but this differential is often overcome by the long term financing extended by some engine manufacturers. Particularly in the case of gas and diesel engines, the cost of fuel is frequently less than the power cost for the motor and much capital is made of this, especially with agriculturalists, who constitute a large and important number of power users in this state. Power costs are made up of energy charges, demand charges (based on connected load) and sometimes the cost of power line. Of these, the farmer complains most against the demand charge, because, on the face of it, he gets less in return for his money than in any of the other items.

Because of the hue and cry raised by the farmer against high power costs, impetus has been given to the improvement in efficiency of existing installations. By proper change of pump bowls and runners, the power requirements and corresponding energy charges have been reduced. The existing motor is satisfactory from an operating standpoint, although it may be larger than necessary. The farmer doesn't want to incur the expense of buying a new motor, nor does he feel he should pay the demand charge based on old conditions. The present practice reacts against the utility—creates hard feelings on the part of the consumer and the machinery manufacturer. It has resulted in disconnecting motors from the line, which in turn affects the sale of motors to other prospective users. The question is "How can the demand charge obstacle be overcome?"

During the past few years there has been an increasing tendency towards so-called full-voltage starting of motors. Because of the simplified control and greater flexibility, which this provides, such installations are quite popular. They are, of course, limited by the locked rotor current permitted by the power companies. These limits differ in the districts, depending upon conditions. The values set by the N. E. L. A. are considered too conservative for the power systems in California, and recommendations for liberalizing the conditions were made by the P. C. E. A. some years ago, to the utilities. It is believed that a uniform practice in this respect will eliminate difficulties being experienced from time to time.

Wanted—A Working Plan for Industry Coordination

DURING the discussion of one of the problem papers at the recent conclave meetings, a speaker from the floor said, "As each paper presents a problem from the viewpoint of one branch of the industry, we note that it has bearing upon problems confronting the other branches of the industry. Apparently, you cannot solve the problems of one without either solving or adding to the problems of another." This thought expresses what was perhaps the most predominate note of the meetings, both at San Francisco and Los Angeles—the necessity for industry coordination in order to achieve industry cooperation.

Problem No. 4,
asks for a practical answer to the ever present problem, "How shall we develop better coordination in the industry?"

The electrical industry is not composed of a number of independent units linked together merely by emotional bonds of friendship. It isn't a case of "We are all going the same way, let's walk together for companionship's sake"; nor can we leave the lame and the halt behind or take them on merely as an act of Christian charity. The electrical industry is composed of interdependent interests, mutually responsible to each other for the ultimate progress and welfare of all. Without well-defined channels of distribution, properly maintained all the way from the manufacturer to the ultimate consumer, everyone along the line, including said consumer, suffers. And without a maximum of industry cooperation the utility can never hope to prosper to the fullest.

Close confinement to our own problems makes us introspective and we establish our policies without due regard to the effect of those policies upon other branches. Conference, cooperation and understanding are necessary to avoid the retarding consequences of thoughtlessly established plans and programs.

The purpose of this paper, therefore,

is to present the problem of "How Can the Industry Best Effect Coordination That Will Result in Close Industry Cooperation"? This problem cannot be set down in outline form because it is fundamentally a problem of human relations. As an illustration, however, of the need which each branch has for the understanding and help of the other branches, we present below, "The Problem of the Wholesaler" as submitted at the San Francisco meeting.

Remember, the solution which you are asked to prepare need not be confined to those particular problems of the wholesaler. This paper is presented merely to start your thoughts toward the necessity for coordination of the industry as a whole. The procedure which you recommend or the program which you present should be directed toward that goal.

The Problem of The Wholesaler

[As presented to the Pacific Coast Electrical Assn. by a northern California Committee.]

Stated in two words, the problem of the electrical wholesaler is that of "unethical competition".

Although the naming of the problem itself can be simplified, or summarized in two words, it will take far more than these to explore it deeply enough to bring members of the industry sufficient understanding of that problem so that they may endeavor to help us solve it by writing still more words on the subject. It is well to suggest at the outset, therefore, that words alone will not solve the problem. They may clarify it, may explain it in such a way that more of us can appreciate it. But it will take *action* to remedy the conditions which make this a very vital problem, first to wholesalers, but ultimately to the entire industry as we know it today.

To restate the problem first, then explain it, and finally to place it squarely before the industry as a challenge for thought and action a reasonable definition of that problem might well be stated thus:

"How can the electrical wholesaler combat the competition of those who sell to his same classes of trade but who do not maintain sales organizations, do not go to the expense of disseminating information on new developments, do not take part in constructive industry developments—but who operate largely as mail order houses or brokers?"

Types of Competition

First, let us consider this competition in its detail.

Mail order houses are of two general types, with numerous variations. There are first the large, national mail order houses with chains of retail stores throughout the country. Buying in tremendous quantity, they can bargain with the manufacturers for exceptionally favorable prices. Their purchase cost is often lower than that of the wholesaler. With selling experience and data before them gathered from this

W. C. McWhinney and Al Nicoll, chairman and vice chairman of the Business Development Section

wide network of retail stores they select only such lines as move quickly. They make no attempt to carry full or complete lines. The lines carried, be they in wiring supplies or appliances, they resell at prices often below those of established wholesalers' *costs*. They offer these either on a mail order or cash and carry basis. The lines carried are often the product of the same manufacturers which supply the wholesalers, sometimes given a private brand name, sometimes not.

Next there is the occasional wholesaler who makes a large stock or distress purchase, and who offers "specials" on a mail order or cash and carry basis. His offer usually is of some "bread and butter" or staple item for which there is more than usual demand.

Hard to differentiate sometimes from the latter is the broker who often has no stock at all, but merely lists such available stocks, sells them and then has them picked up by some delivery service from the warehouse of the manufacturer or agent upon making the sale. He is merely a negotiator or manipulator of stock. He has no investment to speak of, very little operation or overhead expense, takes no part in any industry affairs. Naturally he can operate on a thin margin for a quantity deal, which he offers at prices often at or below wholesalers' costs.

Next in the scale is the general wholesaler whose business may be principally hardware, plumbing, drugs, or mercantile lines, but who spreads over into the electrical field particularly when he can make a good buy. On a small scale he too works on the fast moving lines—the staples.

Then there is the manufacturer's agent whose principal either has no definite policy or who is desperate for an opportunity to "crash" into this Western market and doesn't particularly care how he does it. He sells direct to the wholesalers' customers and often below wholesalers' prices.

Finally, there are the manufacturers themselves who sell direct to the trade, either as a national policy or in order to break into the market.

Another form of competition which hurts wholesalers in some areas is that brought about by the large stock purchase of appliances by a utility, which in turn acts as a wholesaler in distributing these to the trade for a special campaign at prices which those who handle competitive lines cannot meet. This has the effect of throwing undue support to one line or manufacturer or wholesaler and to hinder other lines, which might also add to the electric consumption, from getting a fair chance in the market.

Such is our unethical competition. Next let us consider the effect of this competition upon the industry and on us.

What It Does

Much of this competition operates chiefly by the offering of "specials" or "leaders" on such bread and butter lines. This has two effects. First, it gives an entirely wrong impression as to the real price level. It breaks down economically balanced schedules based on manufacturing and distribution costs. And it demoralizes the market, for it causes panicky attempts to meet this competition, attempts that destroy friendships, confidence and months of cooperative effort.

Secondly, this type of selling skims the cream from the market, leaving the skimmed milk of costlier-to-serve business to the established wholesalers. In other words, the staple items, from which the major orders are to be expected, are sold off in this fashion. Those who are in the utilities will understand this better if we liken the situation to the effect of the isolated plant which likewise skims the cream in a business or industrial district and leaves the skimmed milk of costlier service to the utilities.

To the wholesalers is left the burden of supporting on the remaining business lines, the service and market development work which the trade has come to expect.

It will be well to survey what this service is. It is vital to a real understanding of the problem and its solution.

The industry has come to look to the wholesaler for:

1. Maintaining the quality lines of merchandise.
2. The maintenance of a credit service based on sound principles.
3. Delivery trucks and men to render quick service for the convenience of its customers.
4. Maintenance of complete stocks so that

even infrequently demanded items may be had with reasonable promptness.

5. Making engineering data available to the trade and to the industry, and assistance in applying it to particular problems or projects.
6. Assistance of its salesmen in developing new projects and new business.
7. Contact with architects and engineers to bring them knowledge of new lines or to aid them in using old lines more effectively.
8. The maintenance of a staple market, which means a stability also to those who depend upon the wholesalers for supplies.
9. Recognition of the channels of distribution, and to that end the proper and fair classification of customers entitled to discount according to their service to the public.
10. Increase of load to utilities through promotion of load building lines whether these be fast moving or not.
11. Catalog information and data on manufacturers' lines.
12. Promotion and advertising, display service and merchandising methods and campaigns for the trade.
13. Maintenance of decent wages, salaries, and hours for its employees. Obviously, this promotes high standards of living which reflect in more use of electricity and appliances.
14. Participation in civic activities as good citizens should.
15. Participation in industry activities—such as this very conclave and association, and numerous others of benefit to the industry.

When the wholesaler is left to carry this responsibility without the compensation which the sale of staple lines at legitimate prices might bring him, his overhead increases out of all proportion to his compensation. The expense of carrying this burden on the slower moving lines alone will make this service far too costly for him to render.

The Dilemma

Such is the problem. How then is the wholesaler to meet it?

Must he stand firm upon these responsibilities and services, and if so, what help can he expect from the industry to see that these services are made worth while?

Can the wholesaler expect *purchasing policies* from at least the responsible elements in the industry—the utilities and sound contractors and good merchants—which will be in line with their *selling* policies? We are only puzzled and made cynical by the high sounding pronouncement of a sales policy designed to promote confidence in the integrity of a company and good will towards its name on the one hand, and practices in purchasing that, to say the least, are destructive of that same confidence and good will and that promote suspicion and retaliation.

Or must the wholesaler lower his standards to meet the competition on its own level? Before making a choice it may be well to consider some of the consequences of such a step.

To the industry at large, this would mean an abandonment of friendly relations, or policies and principles. It would destroy margins designed to give fair trade an opportunity for reasonable profit. It would mean no participation in cooperative activities. Those things would be luxuries in a dog-eat-dog level of business.

To dealers this would mean less service, less assistance. It would restrict stocks on hand to fast moving items and little else.

To those contractors, who contribute to the threat by placing purchases of staples with these unethical competitors, it would mean slower deliveries, less credit facilities, no recognition of trade channels, little or no help in developing new business. It also would mean a smaller gross business which would trim his percentage of profit that much more.

To utilities, it would mean the loss of one very effective sales force putting forth efforts to build more load.

To manufacturers, it would mean increased sales and promotional cost, and less service to their ultimate consumers.

The public would feel this breakdown also. The wholesalers have long worked for high standards of installation and for quality materials. To this end they have supported ordinances and legislation for the protection of these standards. With an "every man for himself" competitive situation, the effort along these lines would have to cease. Quality would be sacrificed to price, and the public would be eventually the loser. Standards of living would suffer—wages, salaries, hours.

These are stark realities. The answer must be no less realistic and practical. The problem with us is vital—fundamental. In presenting it to the industry, it is our hope at least that it will bring a clearer appreciation of some of the forces which impress themselves upon our industry. And if you can help us to a solution, you will in turn be rendering not only our branch, but all branches of the industry, a real service.

Problem for Candid Cameraman, Too

(How can we get hotels to install enough lighting for a picture?

At the San Francisco conclave Electrical West's candid cameraman snapped away at every speaker, but the dim, unscientific lighting at the hotel was so poor that only those shown here came out, and not very well at that. The subject, inadequate wiring, and the remarks, both were candid enough to register—

Louis Douat—contractor:
"We applied the usual acid test, 'What good will it do,' and the thing fizzed up"

John Wrenn—utility:
"A visit to the 5 and 10 cent store will give you an idea of what the public thinks about the adequacy of its wiring"

Arthur Kempston—manufacturer:
"Is it really the cost of wiring that is a hindrance, or just poor salesmanship?"

Harold Gerber—inspector:
"When a house is finished and the contractor gets it inspected, the wiring is the minimum that the law will allow. Then the home owner and his high school kid move in to make it adequate"

Harry Carroll—utility:
"The principal use of cowhide is to keep the cow together"

Engineering Symposium + + +

[A monthly forum in which engineers will present and discuss their problems, this department is dedicated to advancing the art of power generation, transmission, distribution and utilization]

Combine Engineering and Load Building for Greater Economy

By A. S. GLASGOW
San Diego Consolidated Gas & Elec. Co.

IN PLACING before you the problem, "From an operator's standpoint, what types and how much additional load can be added to existing electrical facilities?" we will need to make a clear statement as to what we mean by facilities. Facilities here means water in storage or flowing past a generating station, water wheels, fuel supply and storage equipment, boilers, generators and other station apparatus, step-up transformers, transmission lines, step-down transformers, switching, regulating and other substation material including feeder lines, distribution lines and everything on and attached to them, including the service and meter for the ultimate consumer. The curves and data in S. J. Lisberger's excellent paper (Electrical West, Dec., 1934) are still true in every respect and with only minor modifications, will apply to almost any system we may consider. Any further statement about the conditions which have brought this problem so forcibly before us and any additional curves or other data would not add anything to his paper.

In order that you may attack this problem intelligently, a careful study should be made of Mr. Lisberger's paper and of the discussion following it. In his paper the following statement appears: "It is apparent that the primary object of this problem is to work out methods for taking on new load that will not require capital expenditure and that the existing facilities be used to supply as many kilowatt hours as possible, due consideration being given to and generating and transmission apparatus to supply this additional output." No change in this statement offers any improvement. Let us now look at the heading of his paper "Longer working hours for existing facilities." If we change this to read "How shall we find a steady job for our existing facilities?" we will put the problem squarely up to you. Our mountain streams continue to run without having done enough useful work, some of our boilers stand idle, some of our generators have been stopped, our transmission lines are so lightly loaded that they present no problem when we must shut them down for repairs, our substations are not causing us to worry on account of overload and our distribution transformers stand ready to carry much more load during off peak hours. What can we find for them to do and how shall we obtain that load?

A number of new developments have made available to us. Simple step regulators enable us to carry more load on our lines and maintain a fair voltage at a moderate capital expenditure that may be warranted even though the additional loads do raise the peaks slightly. Series capacitors and other power factor corrective devices are on the market. The use of these and other related equipment will enable the distribution engineer to make more efficient use of the copper in the lines. There seems to be opportunity here for many valuable suggestions.

Problem No. 1

of P.E.C.A.'s prize paper contest asks "How Shall We Find a Steady Job for Existing Facilities?" Diversified loading, coordinated load building, promotional and off-peak rates, and new applications offer a wide field for those who seek the answer to this important phase of present-day utility operations

A study of the three prize papers submitted during the last contest reveals a large number of good ideas. The first paper recommends diversified loading but this is almost wholly a commercial problem. The commercial man needs all the engineering and technical help that we can give him. What can we do to assist him and how shall we go about it?

The second paper proposes to coordinate new load building with system characteristics. The system used as an example had abundant water available at some seasons and not so much at other times. With so much new power coming into the field and seeking a market, we are faced with the necessity for more load of any nature. The answer to this condition may mean better regulation, higher efficiency and more assurance that service will be reasonably continuous so far as distribution is concerned. What can we do along these lines? The answer of course is largely an engineering problem but how about the commercial men; can they find any new load to improve the diversity factor? Here cooperation between engineering and commercial groups may be profitable.

In the third paper, the idea of using a competitive rate to encourage off peak use is proposed. We all know that any maker of useful material can sell his product at a price sufficiently low but he cannot continue in business unless he makes a profit while doing so. The problem here is how can we offer a competitive rate and at the same time make a profit? This question appears to belong only to the rate engineer and the commercial group and for that reason need not concern us. Now let us go back to the old problem of the high peak and the low valley, so familiar to every operator who has occasion to plot a curve from the hourly load readings of his generator and feeder circuits. If the proposed competitive rate offers the operating man any hope of filling in the valley without raising the peak he should be vitally interested and anxious to contribute ideas and suggestions regarding possible new power uses during off peak periods. When we examine carefully any of our principal power systems, we shall find plenty of excess capacity available between midnight and noon where any load of any power factor or type could be added and carried to a cost to the producer of only fuel and commercial overhead. Many industries using large amounts of hot water, operate only during the day. Why not heat and store this water during the early morning hours from the transformers now in place to operate the factory during the day? Can a shop

doing electric welding which causes radio interference and flicker be induced to operate between midnight and morning by the application of a competitive rate? The dairy industry, food handling concerns and a number of industries familiar to every live power salesman seem to offer many possibilities. If a competitive rate can be used for such purposes, how shall we apply it to rural, industrial, commercial and residential consumers? Will a two-rate meter or a combination of multi-rate and demand metering be the answer?

A careful study of the three prize papers will show that they contain many good suggestions concerning what can be done. We need now some one to tell us how to do these things. Here is your opportunity. How shall we do them?

Floor Discussion of Problem

The portion of the problem, which Mr. Glasgow has presented, that is of the greatest interest to me is the problem of adding ranges, water heaters and refrigerators to the present system. An operating man, due to past training, is constantly tempted to consider rebuilding the distribution system to fit the new set of conditions which have been introduced by a greater use of electricity in the home. This is not the problem which we are to consider, for we have a distribution system that must be used to the fullest possible extent. It is undoubtedly true that much of our system reminds one of "Topsy" who "just grew" but our consideration is directed toward making the best use of what we have.

One avenue of approach to this problem is to determine what are the limits of our distribution system, for this is almost entirely a distribution problem. Is the thing that stops the adding of ranges, water heaters and refrigerators to our existing facilities the overloading of transformers? Is the limit reached because of voltage drop or is the complaint really caused by flicker rather than low voltage? What overloads are safe to carry on small distribution transformers such as are found in the residential area, considering the short duration of this peak load and the long hours of almost no load? Are these overloads caused by ranges, water heaters and refrigerators or by the lighting load? What type of load is responsible for the flicker and what is the cheapest way to correct it? These and other questions must be answered in the solution of this most vital problem.

Another question which needs answering is "what diversity can be expected from a group of homes with ranges and water heaters? To the operating man it would seem that all the domestic load we can add does not affect the peak load on the circuit and leads one to suspect that after all, the lighting peak is still the governing factor in distribution economics.

When domestic cooking and water heating load is connected to the secondary mains it is sometimes necessary to rearrange transformers to provide proper service. These changes are made to provide for as much future load as possible and bring into this problem the question of what the future distribution system is going to look like. If we can arrive at some idea of what kind of distribution will be needed it might be possible to make the required changes in a more permanent way.

Air conditioning is now looked to as one of the principal fields for obtaining an outlet for additional power which is now available. However, up to date, the results in this direction have been somewhat disappointing from the power companies' standpoint. This means that there has not been the public acceptance to start the tide in the buying direction.

It seems to me this problem deals with what is our load factor. If we will analyze our system load factor, we will find that in the last ten years it has been almost constant. In our particular system, it varied a few per cent but has been approximately constant. Our kilowatt increase has been about 70 per cent during that time so we know that we have taken on some fine load; but the load factor has remained almost constant. Our monthly load factor, however, has varied about 10 per cent during the year, though kws. have not varied greatly. I am of the opinion the engineering section can be of great value to the commercial department in pointing out to them, by some laboratory tests, why we have variation in those load factors and what brought them about.

We are not going to be in position to get 100 per cent load factor. In order to do this we have to change the habits of people and make the sun work overtime. Yesterday, one statement was made, that 1, 2, or 3 per cent in the load factor makes a big difference in the earning capacity of any utility. While we might strive for 100 per cent, yet we will be glad to have that 1 or 2 per cent increase in the load factor. Let us lay out a certain amount of work at this time and accomplish it. Do not discourage the commercial man by expecting him to increase his load too much, but the engineering section can be of great value in determining what type of load can help.

I think the rate question should be left largely with rate engineers and will not try to get into it too strenuously. We find the papers are inclined to be rather vice versa. If you can determine what loads to add on, to increase our load factor and ways in which we can do our work better, I am sure we will arrive at some fine results.

This year I believe this association has been interested in several new kinds of load, particularly those that would fill up valleys and level off hills. Although for some time now all of our best thinking men have been looking for such loads. I believe they have failed to find one load that is now looming, which I believe some day may be worth while—that of cathodic protection. I presume most of you know the elementary facts about it. Briefly, it is: Steel when buried in ground has a potential to the soil of about 0.4 volts. The theory is, if you apply a direct current external potential, decreasing that of the pipe about 0.4 volts, it will stop all soil corrosion. This is just beginning to be used by corrosion engineers. I refer particularly to San Diego Cons. Gas & Elec. Co., So. Counties Gas Co., and Pacific Gas & Elec. Co., beginning to use electricity to halt corrosion. At the present time it is being used only on insulated pipe, because if used on bare pipe the low efficiency makes this protection too costly. The present efficiency of this method of protection is around 1 per cent or 2 per cent. If the time comes when we can raise efficiency from 1 per cent to 10 per cent, then that day we will begin to protect the bare and poorly insulated pipes by the use of manufactured electricity. At the present time, this load does not amount to a great deal, but a few years from now it will be much larger. A few years ago we could not have foreseen the growth of load by the radio, electric clocks, refrigerators, etc. Today that load is well worth while. This load I speak of will be an ideal load, a load of 100 per cent power factor, will be a load that will be on from New Years to New Years. The electric men should put that on their list to cultivate and help in every way possible.

One way they could help: The gas men are being handicapped by low efficiency of cathodic protection. Gas men can go to the station and buy alternating current that is stepped down, then is converted from a.c. to d.c., with resultant 10 or 12 volts d.c. The negative is connected to pipe line and positive connected to dead-man. This will cause the current to be drawn out of pipe or caused to distribute by annode. Help the gas man to put this load on the market .

It seems that this paper and the discussion we have had might answer some of the questions asked yesterday. Today we are also asking questions. Here are a few notes:

Yesterday, the electric kitchen was pointed out as being a very good proposition and one that would work in load building. We who have had homes for some years find it rather hard to have electric kitchens. I think if it were possible to arrange in some way to put on an electric kitchen campaign, sell the electric kitchen, put it in the home and finance it in such a manner that one could afford to pay for it in a few years, it would be well worth while. One trouble is in buying heavy appliances, and in the wiring for ranges. With some of us the range cost is prohibitive. It seems that if manufacturers could decrease the cost to where a man could purchase his range and finance it in such a way, to get the wiring and entire job paid for, we would build load.

Mr. H. C. Rice gave a very good talk in San Diego about a month ago in which I thought he brought out some very good points. In his talk he pointed out that though various codes and changes had taken place, we had not changed the ten commandments much, and showed that if possible to bring wiring codes down to something like a few commandments, we could get more out of jobs. Get it down to where the average man could purchase it, and we would have a lot of load building.

Another thing that is greatly stressed, is on domestic water, and consideration of the off-peak load period. Just what efforts have been made with these, I think might bear consideration. What I have in mind is, for example, heating water for laundries, hotels, to be stored in large insulated tanks, with low k.w. consumption of energy. By installing a small booster heater, for use after off-peak heating period, water at a higher temperature will be available.

I think the paper by A. A. Kronneberg (Electrical West—July, 1935) is very excellent in that it deals with fundamentals of problem of what kind of additional load we can add. He has analyzed the problem so we can now look at the various classes and decide what class to increase. Once this is decided, we can find out what particular equipment can be added to the system to produce this load. Most of the previous discussion has been along the line of what kind of particular equipment can we add to build up load; but if we start first with Mr. Kronneberg's analysis, we will decide immediately that the class of load we want to promote is that which takes place during the night hours. What kind of equipment can the user apply to increase his night load? What do we want to do at night? Personally, at night I want to sleep. If we could only find a device that uses 100 or 200 watts to make one sleep soundly and wake up refreshed, it would be an excellent thing for power companies to boost.

Recently I learned some things I had not known before. One that in this country, thousands of people suffer from asthma and hay fever, among the causes of which are the presence of pollen in the air and changes in humidity. Another thing, people who have it usually get along all right in the daytime, but suffer at night. If we had some means of controlling the humidity in bedrooms, taking the pollen out of the air, we could give those people a good night's sleep. Air conditioning can do just that; it can take the pollens out of the air, can control the amount of moisture in the air, and uses a little power which will run from 10:00 p.m. until 6:00 or 8:00 in the morning, and should be a wonderful addition of load for power companies, provided all these asthma sufferers can use it. Doctors are strong for this but do not know much about it. The particular doctor I talked to was back East to a meeting this year, and at that meeting this problem was discussed, regarding air conditioning of bedrooms for hayfever and asthma sufferers. I believe a little agitation along this line will be beneficial. One case I know of, that of a person living in San Francisco, found she was free from asthma only while visiting in La Jolla; they have actually duplicated humidity conditions of La Jolla in San Francisco for this woman, who can now sleep.

Continuity of Service--- A Study in Economics

By G. M. BABCOCK,
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and C. N. PARKER,
The Southern Sierras Power Co.

WHEN we consider this question of continuity of service we are reminded of the incident which occurred when a group of the leaders of our industry were gathered to evolve a fitting tribute to Thomas A. Edison, something that would be a token of respect in which the whole country could participate. It was suggested that all the master switches on all the power systems in this country should be opened for one minute. The plan met with approval on all sides until one of the men said, "Gentlemen, we can't do it; just think of the results." He pointed out dangers in the operating rooms of hospitals, of elevators left in darkness between floors, of failures of safety signal systems, of time systems disrupted, of hysteria in theaters, of manufacturing processes ruined and many other serious consequences. No, it couldn't be done—so largely does our cilivization depend upon continuous electrical service. A far greater memorial is the painstaking effort the industry is continually expending to insure dependable service.

There are some classes of consumers who would merely be inconvenienced by an electrical outage while to others, continous electric service is imperative. Of course the ultimate goal of an electric system is uninterrupted service for all consumers. However, the economic considerations call for limiting factors. Therefore, it is necessary to determine just how long an outage different classes of consumers can reasonably endure. How much can we justly spend for elimination or reduction of outages?

Before considering the different types of feeder circuits separately, let us suggest some questions which are applicable to all types. While these questions may apply to all types of feeders, the answers may be different for each.

How much revenue is being lost by utilities due to feeder interruptions? What duration of outages can the consumer withstand before sustaining an actual loss himself? What duration of outage will the consumer withstand before making complaint and what is the cost of handling these complaints?

Then there are questions which are harder to solve. What effect do outages have on general goodwill toward the utility, the refinancing of a utility, the

Problem No. 2

asks "What Constitutes a Reasonable Continuity of Service on Feeders?" When 99.9 per cent perfect service means 8 hours and 46 minutes of outage per year (far more than most customers experience), can utilities evaluate the price of perfection without jeopardizing good will, load building and profits?

consumers payment of bills? How much consideration should be given to the class of service where other forms of energy or fuels can be used by the consumer? What is the effect of service interruptions toward new applications of electrical energy? Will the restaurant manager install an electric eye mechanism to open his kitchen doors if he knows the eye is subject to cat naps? Picture the flying dishes and spaghetti if the door fails to open and the waiter crashes head on.

Perhaps we are placing too much stress on feeder interruptions. The feeder is only one section in the path from prime mover to utilization. Feeder interruptions may be only a small percentage of the total interruptions. We may find an investment for prevention of outages to feeders may be much more effective if applied to transmission, transformation, secondary distribution and services, or even the customer's equipment itself. This subject is primarily concerned with feeder interruptions, yet we should review the rest of the system in order to retain a correct balance between profitable investment and reasonable results.

Residential Feeders

In the past when lights were extinguished in the home for a short time it was an inconvenience. Now in addition to the lights going out, the radio ceases to play, the clock loses time and the interruption is of greater annoyance. Residential feeders in the majority of cases not only supply single family dwellings and apartments but also local stores, markets, schools, and theaters. Shall we consider the one type of consumer who requires the greatest continuity of service as the gauge for residential feeders? Or shall we consider the average consumer and then provide additional service for those in need of it?

We may find that "reasonable continuity of service" varies with load density. More sparsely settled communities should not expect as good a service as densely settled areas. If this is so, just what is this variation?

Then we have the question as to which type of feeder system will give the greatest reasonable continuity of service. Shall it be:

1—Radial feeders
2—Radial feeders with non-automatic tie switches
3—Radial feeders with automatic tie switches
4—Radial feeders fed from two substations
5—Primary network.

Automatic reclosing is something else to think about. When is it justifiable and to what extent?

Commercial Feeders

Let us consider the effect of service interruptions on different types of consumers on commercial feeders.

1. Department stores, in addition to the problem of customers stranded in stalled elevators, suffer an actual loss in goods stolen when lights are extinguished.

2. Office buildings also have the elevator problem. Business is disrupted when lights go out and electrically operated office devices cease to function.

3. In hospitals, particularly in the operating room, the interruption of lighting for any appreciable length of time is very serious. The effect on X-ray and other electrical devices, now becoming so numerous in hospitals, is something to consider.

Nature enters into calculations on continuity of service. At the left is the result of a severe lightning stroke on a 33-kv. distribution pole. At the right is a pole which a short time after the picture was taken was left in the center of the river, the freak action of a sudden flood

4. In theaters and auditoriums the people are subject to hysteria and panic when the lights fail.

In designing a feeder system, how much money can reasonably be spent just for elimination of interruptions? It is a question whether we should endeavor to decrease the duration of outages or the frequency of their occurrence. In other words, is it better to have one outage for a fairly long period or allow a number of short outages amounting to the same length of time?

Regarding standby or emergency service, are we justified in neglecting the smaller consumer while we give the larger consumer additional service? If so, what is the point of division when deciding whether a customer is a small or a large consumer? Perhaps some arrangement could be made whereby the customer would absorb the expense of additional investment necessary for better service. For example, he could have his own storage battery for emergency lighting or he could install his own secondary throwover switch or emergency transformer. By these or many other methods the customer could have any class of service depending on his requirements and what he would be willing to pay for protection from interruptions.

Industrial Service

With the large industrial consumer we may meet the type of load which demands the greatest continuity of service. Here we find the use of electricity is highly diversified. Our major worry is the industrial plant whose product is ruined by more than a fractional interruption. The manager of such a plant realizes better than we, what a shut down of his plant will mean, and because of the quantity of power which he uses he is able to insist on a good grade of service. He is often able to hold over us a threat of transferring his business to a competing form of power. To what expense can we go to not only hold this load, but also the good will of the customer?

Let us look at a particular case. We will assume that you have recently connected a large industrial plant to your lines. This plant turns out a product which, in the process of manufacture, requires a continuous agitation of the material in the hoppers to prevent its setting prematurely. Let us imagine you have just hung up your phone after talking to the irate manager of the plant. Your ears still burn from his description of the organization to which you belong. You have been told that your service is the worst in the world and the XYZ Manufacturing Company demands immediate assurance that such an interruption will not happen again or they will make other arrangements

for their power supply. You stifle your desire to thrash the man and wonder just how much this so-called "great loss" sustained by the consumer was. On second thought you very much doubt whether the damages could be as great as the manager stated. While you wait for a report as to the cause of the interruption you get out the line maps and look over the possibilities. You realize that something must be done immediately. Let us apply this problem to your system. What would you do?

Have we allowed our competitors to scare us with their cry of no interruptions? A salesman asked an operator recently the total minutes his motors had been shut down because of electric outages. "Well," replied the operator, "these two motors have run two years. That is 17,520 hours. They have been shut down one hour and fifty-two minutes and of that time only twenty-seven minutes was due to interruptions to your service. And," he added, "you can't beat that record with any gas engine."

Another problem that we face in serving certain kinds of load is that of a contract penalty for outages. The contract between a Power Company and a large customer provide for a payment of $100 an hour for outages beyond a certain time. In a sense the Company is guaranteeing that the interruptions will not exceed a certain maximum time. How could you determine what that maximum interruption should be and what penalty is justifiable?

Rural Service

We are all aware of the pressing need of reducing the cost of distribution in order that we might satisfy the insistent demand that we furnish service to the sparsely settled rural areas. In order that we may supply electricity to the farms are we justified in reducing the class of service? There are certain inconveniences which a farmer takes for granted. Will the farmer accept a lower class of electric service with his incubators, refrigerators, water systems, etc., than his city cousin receives?

Let us take an example of a feeder in a district which is typical of the marginal areas being considered under the R.E.A. program. This particular feeder and its branches will cover an area of sixteen square miles with thirty miles of line. We will assume the following distribution of load:

Light customers	105
Ranges	62
Water heaters	45
Refrigerators	80
Dairy equipment	12
Chicken incubators	15
Soil-heating equipment	10
Domestic water systems	90

The estimated annual revenue from this feeder is $6,825. If we deduct from this amount the cost of energy, operating and maintenance expense, and the depreciation and taxes required for a system with minimum continuity of service requirements, the net return on the investment will be only 4.13 per cent. Now we will ask you, what kind of service should be provided in a case of this sort?

Between the remote, unattended, non-automatic rural substation with its low cost lines and service equipment, and the high grade equipment used in well developed suburban areas we find varying degrees of service given. Can we justify this difference of treatment between two customers simply because of the difference in the location of their farms?

Continuity of Service

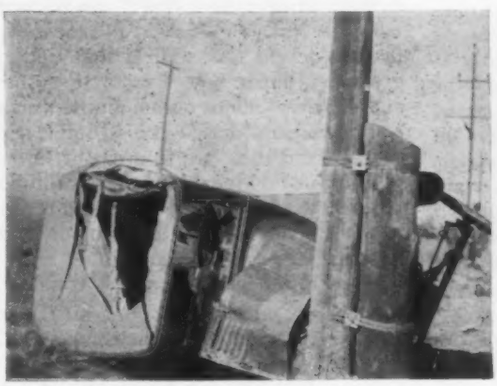
This problem of continuity is one which vitally affects each of us. Each of us can add to its solution by attacking it from our own viewpoint. In developing our ideas about this problem let us try to be specific. If the designing engineer were asked what continuity of service is worth to a customer he might have difficulty in appraising its value. In such a case the application or sales engineer can give us help. Perhaps he can tell us how long an outage could be before the chicks in a hatchery would freeze, just how long after the "juice" goes off before the bread, halted in its journey through the great ovens in the bakery, will burn. He could classify the various loads according to the length of the interruption which would bring serious results.

Have you ever tried to sell a range to Mrs. Hard-to-please? She has just returned from a luncheon over at Mrs. Socialito's. Her hostess was so terribly embarrassed because the escalloped ham was not done in time for the luncheon. Oh yes, Mrs. Socialito has one of those new electric ranges but the current was off. We will let the salesman tell us what this cost the utility company. He can also tell us how such service affects our public relations.

The application and design engineers may be able to suggest methods of improving some consumer's equipment so that short interruptions will have less effect. A notable example of this is the bichronous clock. Would it be less expensive for the consumer to purchase equipment with energy storage facilities than to pay the cost of more continuous service? Doesn't the consumer pay the bill in either case? Do interruptions to service cause as much damage as we are led to believe?

We must ask the operating engineer how he plans to take care of such causes of interruptions as lightning, swinging and broken wires, trees, weakened structures, insulation breakdown, etc. He should know when it pays to trim a tree and when to take a chance. It might be that the salesman who called on Mrs. Hard-to-please to sell her a range knew that the interruption was caused by an "economy measure" which postponed the inspection of transformers until a burnout resulted. Did this pay? When is a portable engine generator set valuable? Here again it is necessary to balance the cost of maintenance with the value of continuity of service. There has been much in the technical press in the last few years on methods for speeding up the restoration of service but we feel that there is still much opportunity for development along that line. Perhaps we should stress particularly the need for methods of applying the new developments to existing systems so that we may meet the demands of a modernized age. Now how can we speed up the closing time to give us an instantaneous reclosure of less than half a second or should we further delay the opening of

Drunken or high speed driving often damages structures supporting the electric circuits more than it does the automobile—another factor that cannot be figured out on slide rules in calculating service continuity



the breaker to permit minor faults to clear? Can our breakers stand such operation? When is an automatic network justified? Should it be overhead or underground? Is it better to reduce the number of outages by a more expensive plant or to accept them and apply immediate reclosing equipment to our lines? These are but a few of the problems which the designing engineer can help us solve.

There are many factors involved in this problem. Its aspects are so varied that many of us can only attack it from one sector. The summation of the contributions which each one can make to the solution will permit us to evaluate for the customer and the company the various degrees of service and to balance against this the investment and cost of maintenance and operation.

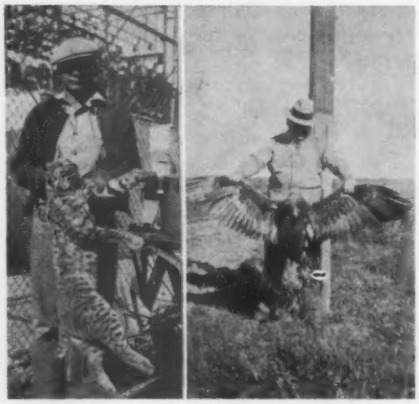
How much service? It is *our* problem. How will you and I solve it?

Floor Discussion of Problem

The above paper provoked excellent floor discussion which was participated in by Messrs. J. M. McClung, Los Angeles Gas & Electric Corp.; H. W. Tice, Southern California Edison Company; A. Frank Ayres, The Southern Sierra Power Co.; R. A. Crosby, Los Angeles Gas & Electric Corp.; W. H. Talbott, San Diego Consolidated Gas & Electric Co.; H. E. Boles, Southern California Edison Company; Orien A. Gustafson, General Electric Company; L. A. Buese, Los Angeles Gas & Electric Corp.; G. M. Wills, The Southern Sierras Power Co.; E. R. Stauffacher, Southern California Edison Co.; C. S. Taylor, Bennett and Taylor; E. F. Randolph, Southern California Edison Co.; H. A. Lott, Southern California Edison Co. The following supplement represents a combination of the thoughts and ideas which they have expressed which are particularly pertinent to the problem under consideration.

We, as utility companies, are in business for the purpose of selling electricity. The continuity of service is the most important factor in attaining new customers and holding our present ones and enlarging the field of the use of electricity. In considering continuity of service it seems desirable to class the outages, first according to their cause, second according to their location on the system, and third according to their importance to the consumer. Certain outages may be within our control such as those resulting from maintenance and construction work and those due to certain types of equipment failures. Cannot some of these interruptions be arranged to suit the consumers' convenience? Would it not pay to make a more general use of live line tools? While the number of controllable interruptions are usually fewer than those beyond our control, could not this number be further reduced by a more careful inspection and maintenance of company equipment? Often load checks on transformers might reduce outages by indicating the need for increased capacity. A good remedy for interruptions is proper maintenance.

We speak of certain interruptions as being beyond our control, but is this entirely true? In combating interruptions due to lightning would the expense resulting from the elimination of



Wild life contributes its share of headaches for the service man. At the right a 36-lb. lynx which met his death in interrupting a 33-kv. line. At the right an American eagle which flew into a line and left customers served therefrom without energy for a short period

fuses and the use of reclosing equipment be justified? We know that in one company the cause of 82.7 per cent of all outages occurring over a period of three and one-half years were cleared before the first reclosure. In comparing overhead with underground circuits, it was shown that in one system the outages for overhead circuits averaged 8.2 minutes, while those for underground averaged 13 seconds. Can we look forward to the day when new designs and methods will so reduce the cost of underground equipment that it can be used more generally? We need to remember in considering this subject that underground failures take longer to locate and repair. Cannot automatic networks equipment and designs be so improved as to permit their use in areas of lower load density? Some cars like to climb poles so the location of poles and transformers invite study. One company has had less damage by hanging all transformers away from oncoming traffic.

Research on portable and auxiliary power equipment should be encouraged. Picture a serviceman with a suitcase delivering 10 to 20 kw.-hr. of stored energy to the consumer. We need to stimulate the search for better methods by locating faults similar to the Murray and Varley loops used so successfully by the telephone companies for years. The installation of breakers instead of fuses will often shorten the outage.

Every branch of the industry must help us give continuous service. The manufacturer can contribute equipment designed to minimize the effect of interruptions and to facilitate inspection and repair. The designers and architects can recommend auxiliary power sources with limited capacity to care only for emergency needs. Salesmen can encourage customers to buy equipment with time delay features. The publicity men can help inform the public on the difficulties and expense attendant to 100 per cent service and the tremendous strides the industry has already made toward that end. He will help with the temperamental man in whom the make up is 98 per cent temper and 2 per cent mental.

We are prone to consider interruptions to service from our own viewpoint but we should step into the consumer's shoes for a while and see how they pinch. Always a loss to the consumer is also a loss to the company. From the consumer's angle cannot interruptions be classified as those which are of such short duration that they are negligible, those which are only an inconvenience and those which cause serious damage to the consumer? We ignore the first, should be diplomatic with the second, and sweat over the third. The problem is to determine the time boundaries of each class and to apply the results of this study to the individual feeder.

In discussing graded services, it was pointed out that in other lines of business it is common practice to make an extra charge for preferred service. People patronize extra-fare trains, why not an extra charge for guaranteed continuous service. It has been stated by a large department store that on a sale day a two minute outage will cost them $5,000 in stolen goods. Why can't we give such consumers service insurance, the charge varying with the grade of service requested? Such a policy will clarify the consumer's idea of his actual needs, he may even find that perfect continuity is not so vital as he supposed and his demands will dwindle as he realizes what he must pay to have them satisfied. The company will also know exactly what is required and can prepare for emergencies intelligently. In arranging for service insurance, the engineer and operating man can be of assistance to the rate engineer by supplying the cost data necessary in formulating such rates. In some cases would it not be more economical to pay a pen-

alty for occasional excessive outages than to install expensive duplicate equipment which would be infrequently used?

Many outages resulting from defective or poorly adjusted consumer's equipment are blamed on the power company. Would it not pay to make inspections of consumers' apparatus and wiring in order to reduce these outages and to foster good will?

If we have servicemen familiar with a consumer's complaint, in case of trouble he can be a great help in locating the difficulty. If employees can be trained to remember the customers which will suffer most from feeder interruptions and render aid to them, we will win our customer's good will. Things never hurt as badly if we know someone is making an effort to change conditions and if we can get such a first aid story over to the public we have an interested public instead of a criticising one. Why not a course of training for each service man with a definite problem to solve so that when the emergency comes he will, figuratively speaking, put a tourniquet on the arteries and not waste time washing off dirt. Then after a service man is trained, make sure the company reaps the benefit and he is not lured off by better pay elsewhere.

Not only does the public enjoy human interest safety stories, but each employee should be a committee of one to educate all consumers against common hazards, such as connecting radio aerials to power poles, flying kites, shooting insulators and by-passing fuses with pennies. Consumers might be encouraged to help trouble shooters to locate disturbances by telephoning in reports of unusual flashes or broken insulators that have been observed.

What constitutes good service is a relative matter after all. Some years ago a franchise called for cancellation if the power was off for thirty days. Fancy such a franchise now. But even today 98 per cent perfect service falls far below general practice for it would mean 7 days, 7 hours, 12 minutes of outage a year. Even 99.9 per cent "Pure" means 8 hours, 46 minutes in the black. We must be better than "good" and each large consumer and his needs offers a specific problem.

Industry Cooperation Required To Lower Distribution Costs

By CHAS. E. SCHNELL,
San Joaquin Light & Power Corp.

THIS is a presentation of ideas and suggestions gathered here and there, but more particularly from Fall Conclave of Operating Economics Section, Pacific Coast Electrical Association, October 25, 1935, San Francisco.

The motives which prompted the question propounded in this problem were not with the idea of giving utility engineers something to use as mental gymnastics but rather a definite and well thought out attempt to find the answer to one of the most pressing and up to the minute problems that confronts the electrical industry today.

The subject of cost reduction of electric distribution is one thing, but when it is tied up with the necessity of meeting present day high grade standards of service, it becomes quite another problem, the answer to which can never be a definite empirical rule to be applied in every case, but rather a series of well thought out and developed bases of procedure that can be used with some judgment and decision. No hard and fast rule can be set up — hence those of us who delve into distribution problems are assured of something to do as long as the results obtained are commensurate with the cost.

We, of the utility industry, point with pride at the continual downward trend of electric rates. This has been demonstrated as being one of the greatest factors in increasing customer average use. Rates on the Pacific Coast are now down to a point where they compare most favorably to those set up by the so-called yardstick proponents. Our standards of service have been developed to their present high quality through years of experience of customer contact and a resultant understanding of what the customer requires. The best engineering talent and technical skill of utility organizations as well as the large number of manufacturers supplying materials and equipment to our industry have been directed toward rendering our service to the customer at the proper utilization voltage and with the minimum amount of outages and "flickers"—either one of which is generally more distressing to the operating men than to the customer so afflicted.

Thus we have much of which to be justly proud. The other side of the picture is not so bright. If, with these declining rates, adequate service, and proper voltage regulation, there was a parallel trend toward lowered distribution costs in overhead lines, underground systems and all customer facilities, then our problems would be quite simple. Unfortunately the trend is toward continual rising costs to adequately serve the customer. We must, therefore, find some method whereby the trend of distribution costs may be made to closely follow the trend of lowering rates. To arrive at any other answer is to be dilatory in our job, so when we of the utility industry are asked "Can the Cost of Electric Distribution Be Lowered?" the answer must at once be "Yes" and, after thus committing ourselves, we had better take the whole question apart and find out what we can do about the future costs and why we haven't felt it possible to lower distribution costs a long time ago. In other words determine of what does the "How" of the problem question consist and what can we do about it.

In looking at the utilities' "family skeleton" of distribution practices we no doubt will find some bones of contention that will call for careful and well thought out consideration before we alter or discard entirely. Practices, methods, and standards are the result of years of experience and are not to be discarded lightly but they should be reviewed with an open mind, willing to be convinced that there may be something that could be so changed as to materially reduce costs without jeopardizing our present adequate and well-regulated service.

Far be it from me to suggest that

Problem No. 3

Asks "How Can the Cost of Electrical Distribution Be Lowered Giving Due Consideration to Adequate Service and Regulation?" As pointed out in the accompanying article the distribution engineer may provide the mechanical solution but not without the help of other departments of the utility, of the regulatory bodies and the manufacturers. Can these elements be coordinated into a plan to make the trend of distribution costs conform to the declining rate schedules the customers are enjoying?

we even consider something "cheaper and almost as good" in the matter of our distribution facilities and the service we render therefrom, but, in casting about for an answer to our problem, it might be well to ask just what *is* adequate service and when is service no longer adequate? Do the customers' ideas of adequate and continuous service coincide with the standards which have been set up by the utility operating men and does the gradual lowering of the price of the only commodity which we have to sell, release us somewhat from the premium service which we have felt was paid for in the former higher rates? Does continued lowering rates justify us in widening the band of service voltages which we now set as the outside limits?

This is dangerous ground but I hope someone will have the courage to tread upon same. But, to substantiate such a course of procedure, we do not have examples of customers who, by reason of their large use of power, are able to purchase it at transmission rates and are content to be served from a single transmission tap and from their own transformer bank that has no spare transformer for emergency use? This is the type of customer that the electric utility has always felt justified in rendering the most "sure-shot" service with duplicate sources of power and all the other refinements. Why does such a customer make a large investment and be content with such additional interruptions as are liable to occur? Simply because his kilowatthours cost him less than in these savings he feels the justification for his expenditure and the added risk he takes in possible service interruptions. Might not this thought be passed along to the thousands of smaller customers? Doesn't the reduced cost of kilowatthours imply a reduction of the obligation on the part of the customer to be less dissatisfied when there is a power interruption than he has been in the past? We aim and expect to maintain our present high standards but doesn't the line of reasoning of customers just cited give us an insight into customer viewpoint which perhaps we have not appreciated before?

Who is going to assist in finding the solution to our problem? Certainly we are not going to leave this on the doorstep of the distribution engineer and say—"Brother, the child is yours!" Rather, in a closely-knit industry such as ours, I expect to find assistance from all departments, from the executives who secure the money to finance our distribution facilities to the men in the field who actually spend that money to construct them.

To the distribution engineer we shall naturally look for the mechanics of the problem. It is he who makes the design and sets up the standards which will comply with all the many requirements of strength, clearances, safety and service and which also will be capable of living the long service life necessary for such facilities. Can standards be set up which could be called "Methods of Procedure" and which would be flexible enough to leave much to the judgment of the men in the field? After all our standards are a matter of judgment and who, in most cases, can give a better and often a cheaper solution to a particular problem than the field men? Possibly some of our present standards would be different if our distribution engineers could spend more of their time with the outside men.

This then brings up the thought that our estimators and construction foremen should be more carefully instructed in their duties with especial attention paid to such exceptions to construction standards as have been granted by regulatory bodies to reduce construction costs. Every advantage should be taken of these exceptions. Along with this should be stressed that every effort should be made to keep in service those facilities which we now have and which up to now have an excellent service record. Before we spend one dollar and save two dollars, let us be sure that those two dollars can't be saved with a considerable less expenditure. Why not give our field men—and many of the rest of us — a more complete instruction in costs, depreciation, annuities and the financial end of our business that there may be a complete consideration of everything before any part of our present distribution plant is replaced? How else can the men who actually spend the money be in a position to know the right thing to do in all cases?

In discussing expenditures for plant improvement I wonder if enough information is had as to whether the best use is being made of existing facilities. Should not more investigations of service conditions be made to determine just this? Is full advantage being taken of such voltage regulating equipment as we now have in service? Could more frequent use be made of the taps on station and distribution transformers to improve voltage on certain feeders? Possibly a closer check on general system conditions by the operating department will indicate that the plane of system voltage may be altered at times to give a better range to those regulating devices nearest the load. Are there some synchronous condensers that could carry more kva? Why not look up their test reports and present operating data, it might prove to be a pleasant surprise. In looking over existing facilities are there some standby steam units in which the prime mover could be disconnected from the generator and the latter started up from some other prime mover source and thus be put to work in assisting in the solution of this regulation problem? In my opinion some of the greatest opportunities for improvement of system conditions with existing equipment at minimum expense will be found where we least expect them—right in our own dooryards. Why not study our systems and their facilities with this thought in mind?

But to get back to the problem confronting the distribution engineer, so many definite limitations have been set up either from past practices or from regulatory bodies that the question naturally arises "why not reconsider all of the factors entering into distribution facilities design? Many of these are set up as definite specifications over which distribution engineers have no control. Why not invite further discussion of these various requirements with our regulatory bodies with the idea of holding fast to those which are agreed upon as essential and with the hope that the specifications of those which are controversial can be approached in a frank and understanding manner? Regulatory bodies have a very closely knit bond of common interest with the electric utilities in the matter of lower rates and adequate service. People in this state have come to look upon our regulatory bodies as their official proponent of the things they desire. Therefore would it not be of tremendous interest and much to the point if the suggestion of these various bodies could be presented? Surely from their many studies and investigations have come a definite understanding of this utility problem. However, with a different viewpoint than may be had from utility engineers, a definite contribution toward a proper solution of this vexing problem question should come from our regulatory bodies. May I offer this suggestion with the hope that our regulatory bodies will cooperate to the limit. The customer must be served —it is the duty of each to see that this service is rendered properly and at the lowest possible price consistent with the best standards possible.

From that proving ground of all things, experience, electric utilities can point out lines on previous lower standards that are still in satisfactory service and which have offered no undue hazards or maintenance expense and from which further long life is anticipated. If the future can be judged by the past, then is it not proper to suggest that there is somewhere a place in

a revised standard of distribution facilities for a liberalization of the regulatory act on which our construction is now based? No general scrapping of this act or our present construction standards is suggested but is there not some proper course that can be pursued between present practices and some of the sub-standard construction proposals? Such a course should materially reduce first costs, should not reduce greatly factors of safety of materials nor increase maintenance costs providing high quality of material is first installed. Other salient features should be capable of being worked out satisfactorily. I believe that it is axiomatic that if distribution facilities are to cost less they must be designed with that thought in mind, but we must not direct our efforts to the point where cheaper construction will be detrimental to the very reason for which it is now sought.

It would be particularly desirable to have some solutions to this problem submitted by those we choose to call executives, for their viewpoint may be one which would be most helpful to the engineer. What measure of support to their arguments could such a solution bring from the stockholders of our companies? They are the people who have financed our business and their interest in the problems of the companies is reflected in how do lowering rates and rising costs affect the future of their investments? What would be their reaction toward any modification in service standards to maintain dividend payments?

Some of the most helpful solutions of our problem should come from the Commercial or New Business Department. Load curves should be placed into their hands that they may study the types of load best fitted to smooth out these curves and to load up the feeders that are now idle for long periods of time. What fine support to reduce distribution costs could be built around a program of sales activity designed to add new load to existing feeders as well as to maintain the load that we now have! Possibly more attention should be paid to this type of activity for it is here that we have our investment in facilities already made and any additional business can be served at a nominal expense. This will materially help solve our transformer loading problem. Will the New Business Department accept a challenge and give us the benefits of their ideas and activities in assisting in the solution of our problem question?

There are other departments of our companies that could be of great assistance. Can not the Purchasing and Stores Departments tell us why some of the things we specify cost apparently more they should? Do we specify too many articles which can be used to do the same job and thus increase purchase and stores expense? Do we change our standards so often that much slow moving material accumulates? We need the assistance of the Purchasing and Stores Department—will you give us your suggestions? We should like also to have the assistance of such other departments as the Transportation, Accounting, Service and Customers. Perhaps the rate engineers could work out some simplification of rates so that much of the duplicate metering equipment that now seems necessary can be reduced to the simplest form of installation. Surely the department that has kept working our rates down and down will come to our assistance in our problem of distribution cost reduction before the going gets too tough!

In our perplexity there is one group to whom we can turn and from whom we will get whole-hearted cooperation. I refer to the manufacturers of equipment used in our various distribution facilities. During the past five years there has been more development in low-cost devices to improve service conditions than in any similar period. These have run the gamut from line hardware, fuses, transformers with improved regulation, small step-by-step regulators for pole-top mounting, improved customer metering facilities, etc., to heavy duty station apparatus. Surely with such an array of wonderful new developments, we, of the utility business, can find some of the devices of great value to us in our cost reducing and service maintaining problem. Just how can these various devices be best applied to existing facilities and to new construction? This is information which will be invaluable in answering our question and our obligation to the manufacturers for it will be very great.

While on the subject of manufacturers and their products, why not seek a closer cooperation between the power companies and those who make devices and appliances for customer use? The power companies have a very definite interest in the types of equipment that are sold so that their regulation problems and their maintenance service do not get out of hand and become burdensome. Here the manufacturers, the contractors and the power companies can cooperate in manufacturing and selling first-grade merchandise. This in turn will benefit the customer and lessen the possibility of failure of his equipment with the resultant inconvenience to him and the loss of sale of kilowatthours by the power company. Is this not a field where all interested parties can get together and none feel that the others through selfish motives are treading on his rights? Most certainly so, for after all we are working to give the customer the best we have, for it is the customer who supports us all whether we be a manufacturer, or a contractor or a power company.

And so this problem, which at first glance appeared to be one for the distribution engineer alone to answer, spreads out its far reaching ramifications until there is no place in which our self interest is not aroused. To secure the proper answers calls for a cooperation within the industry that has never been required before.

Let us accept the challenge of the question and with full understanding of its import make it a slogan—"The Cost of Electric Distribution Can Be Lowered With Due Consideration Given To Adequate Service and Regulation!" Such a procedure calls for action regardless of in what department of the electric utility or allied business you may be engaged. What are *your* best thoughts on how this can be brought about? Your personal interest in the prize should command your best efforts. The prize is in the well-satisfied feeling or pride of accomplishment that comes from having been of assistance in solving a problem whose proper solution will result in maintaining as a substantial and successful business our great electrical industry of which we are so proud to be a part.

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R.E.A. Funds For Imperial Valley; Litigation Pending

First announcement of a government loan for rural electrification was made October 23 by the Rural Electrification Administration, which has allocated $700,000 to the Imperial Irrigation District, located in the Imperial Valley of California, to construct 497 miles of transmission and distribution lines serving 1,500 families. At the same time it was revealed that $295,000 had previously been allocated, though not announced, to the Southern Sierras Power Company for a project located in the same valley.

At the present time both borrowers are restrained by court orders from proceeding with construction. The REA loans will not be available until this litigation is cleared up.

Energy for the Imperial Valley will eventually be generated in hydro-electric plants along the All-American Canal, now under construction by the District. A temporary diesel power plant is contemplated to carry the load until their completion.

Are Economies Possible in Service Entrance Wiring?

By C. F. GILCREST,
San Joaquin Light & Power Corp.

IN suggesting this subject the members of the committee evidently felt that its effect would be apparent in more than simply the service portion of the installation. The cost of the service entrance equipment does not constitute a very large percentage of the complete installation but it will probably develop that any simplification or reduction in cost of the service will also have a direct bearing on the methods used in the balance of the installation.

What features are necessary for a satisfactory service entrance? In the first place the conductors must be able to transmit the required energy safely and without undue loss. Its location with respect to the property and the utility supply circuit should be such as to make the minimum objection from an esthetic standpoint and yet involve the least expense possible with the requirements. The location of the metering equipment must be a coordinated feature of the installation. For instance, on a residence service the meter should be on the exterior of the building so that access for reading and testing may be most readily obtained. We may consider the service switch the termination of the service. The ideal installation will also provide the best protection to the leads and meter enclosure from illegal tampering.

In attempting an answer to this problem it is not expected that National Electric Code or established rules will be rigidly adhered to. Ideas involving a modification of present rules will be acceptable if they possess intrinsic merit. At present the cost of services is divided in various proportions between the utilities and the customer. Consideration should be given to this factor as to the possibility of improvement through some variation in distribution of expense.

Since electric services for domestic purposes compose by far the largest group, they will offer the greatest field for possible economies. Accordingly, we will consider some facts which may have an application to the situation. Recently the manufacturers have announced two varieties of multiple conductor cables for service work. One consists of either one or two insulated leads surrounded by a bare conductor which is the neutral. Around the neutral is a metallic armor, all enclosed with a weather proofing. This is designated as "service entrance cable." The other variety is the same except for the omission of the armor. This is termed "service cable."

The application of these cables to service installations would appear to secure some very decided advantages. One possibility is the use of service cable in a continuous run from the secondaries to the meter. This would permit the omission of a service conduit. Considerable saving in labor would also result. The single lead from the supply secondaries to the building would be a great improvement from the standpoint of sightliness, and in territory where shade trees make difficulties, that trouble would be much reduced. Another gain resulting from the use of this cable would be the increased freedom from tampering as the concentric conductor makes this a very difficult procedure.

Problem No. 4

asks "How Can Service Entrance Wiring Methods be Modified For the Purpose of Simplification and Cost Reduction?" This problem presents a wide field of study and an opportunity for ingenuity in suggesting a solution. Economies that may be small for each installation bulk large in the aggregate when the number of new services installed annually are considered

With a view to promotion programs tending to a larger consumption for domestic purposes, it has been proposed that some minimum size of service leads be established so that increased average use could occur without the necessity of altering the service. If such a practice is established, it would help to lower the cost of service cable due to the increased use of definite sized cable.

It is quite generally agreed that the most desirable location for the watthour meter on an installation such as we are considering, would be on the outside of the building. This would assume some outdoor form of meter or its equivalent. If the service switch is installed adjacent to the meter, it would presumably also be an outdoor form of switch. However, it would appear to be entirely possible to locate the service switch on the inside of the building and then have the advantage of the less expensive indoor switch. For group domestic installations such as several flats or apartments, it is customary to install a master switch in the main service leads. The necessity for this practice may well be questioned and if omitted, will produce a real economy.

Owing to the varying factors involved, it is difficult to picture a polyphase power service which would be at all typical for the geographical area included in our Electrical Association. However, it is possible to consider one class of service which numerically is of considerable interest to our member companies. In several large areas, electric power has been supplied for agricultural irrigation service and in general, the type of installation has been more or less uniform.

A polyphase bank is installed to reduce the distribution voltage to the rating of the pump motor. Where conditions require, the bank supplies a single motor, but as groups occur they may be served more economically by a single bank. The service is carried from the bank to the pump house for a distance of one or more spans. At the pump house and attached thereto is a service post on which the service lands, thence through the service conduit to the service switch, meter, control equipment and to the motor.

Of recent years several conditions have arisen which indicated that it would be highly desirable to modify the installation just described. First, a considerable degree of tampering was discovered. Second, a decided tendency toward the omission of the pump house left the utility meter without proper protection and forced a relocation of the metering equipment.

To meet these conditions it is proposed to make the installation in the following manner:

A service pole is to be erected in proximity to the pump set. The service wires will be attached to the top of the pole, thence through a service conduit to a sealed weather proof metal box mounted on the pole near the ground. The watthour meter is located in this box. The motor control equipment may be mounted on this same pole if desired and the motor leads will run from the control switch to the motor allowing for omission of the pump house when the equipment is designed for outdoor operation. Installed in this manner, it would seem that an economy can be attained in the total

cost of the installation. At the same time the meter is installed in accordance with the new sequence and the temptation of tampering largely removed.

Since services are used to supply the electric energy to a wide variety of applications, anyone preparing an answer to the problem may choose from a rather broad field. Assume the load to be served and then present the answer.

I was unfortunate in not being able to hear the comments on my paper but I gather from the written discussion which was submitted that some were opposed to the suggestions and others believed that progress might be made by the application of these or similar ideas.

Several matters were mentioned upon which it might be well to dwell further. Attention was called to the expense of "test facilities." If socket type meters are used, the installation does not include an item definitely chargeable to this purpose. Of course, the testing is accomplished by the insertion of a portable jack between the socket and meter. Thus the number of "test facilities" is dependent upon the number of testers and not upon the number of installations.

It is interesting to note that one of the manufacturers announces that outdoor type polyphase meters of all capacities are now available. However, as yet, the writer has not seen a sample or even detail drawings of the equipment. From past experience, it seems very questionable if a device of this character with a comparatively slight background of operating use will be developed without undergoing considerable change. The particular type of polyphase installation previously described and the change mentioned has been a development of the past two years, and accordingly it would be impossible to consider an untried device, which was at the time not ever on the market as a satisfactory solution. It is to be hoped that the polyphase outdoor meter may soon be a practical, available device of the obvious advantages which may be secured from its use.

Each year thousands of new electric services are installed in our state. No one plan will be applicable to all of them. But some plan may be devised which will permit a large percentage of the installations to be made in a uniform and standard manner. By that uniformity, it will be possible to materially decrease the expense involved. The cooperation of the meter manufacturers and the utilities has shown marked improvement in the standardization of watthour meters. In a similar manner the desired simplification and more economical installation of services may be accomplished.

Our subject is not a new one by any means. Reference to the technical press will show articles advocating simplification of services and wiring on numerous occasions in the past. Because these features are more closely controlled by rules and ordinances than some of the other factors of electric service, there has been a greater inertia to overcome. Progress has been made. May it encourage us to greater progress.

Floor Discussion of Problem

Inspection rules require most service sizes based on the assumption that all circuits are fully loaded and operating at the same time. Is there not enough factual information now as to what percentage of connected load is ever actually turned on at one time? If smaller copper could be installed without curtailing the normal requirements, a saving in cost would naturally result.

Is the meter test facility, which is one of the expensive service items, worth its cost to the consumer for the slight inconvenience of a few moments shut-down once in several years for meter test?

Is it not possible to develop a simpler and therefore cheaper test method for meters, for instance short circuiting blades in a separable base? If Power Companies want meter test facilities as well as other special equipment in some cases is it practical for them to furnish a complete meter cabinet containing service switch, meter and other meter board equipment? What will be the effect on Public Relations?

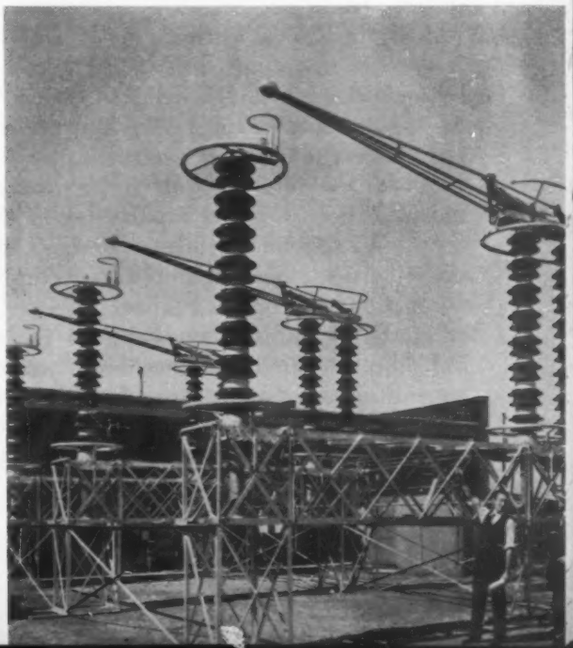
Would the installation of load limitors on all service equipment effect a saving in that smaller services could be installed without danger of overloading?

Should the recently developed service cable be adopted for all overhead services for residences as a means of reducing service costs?

By the use of sequence service switches, theft of current can be prevented just as easily with the metering equipment installed inside a building or in a cabinet on the outside. Is there therefore any reason, except accessibility for meter reading by the utility, why the meter should be on the exterior of a building instead of inside, or in a built-in cabinet on the outside?

Is it not inconsistent with the load building desire of the utilities for them to advocate the use of service entrance cable in a new residence, knowing that due to competitive figuring by contractors the smallest size cable will be installed which will carry the load wired for when the house is built?

Is it not cheaper in the long run and will the sale resistance to heavy-duty appliances not be materially reduced if new installations are equipped with service conduit of sufficient size to accommodate feeders of adequate capacity when heavy duty load is added? Figures obtained from a survey of several hundred jobs were cited to show an average cost of $17.00 for service consisting of ¾-in. conduit and No. 8 conductors; an average cost of $22.00 for a service of 1¼-in. conduit and an average cost of $17.50 for service entrance cable containing three No. 4 conductors.



This 3-pole, 287-kv., motor-operated disconnecting switch, built by Bowie Switch Co., for Boulder Dam, is the largest of its type in the world. A comparison of its size can be obtained from the men in the foreground, A. J. Bowie, designer and builder (right), with one of his engineers

EDITORIAL + + +

REA—How Much?

"IT IS increasingly obvious that the time is at hand when we should adopt a more positive program for electrifying the largest possible number of our farms..... What would be involved in the proper extension of rural lines, so that a much larger percentage of rural homes may be electrified, and how soon can this be brought about? .... What is your judgment as to the propriety, the wisdom, and the justice of providing a subsidy in order to carry out this program and at what point this subsidy should begin?"—*Senator Norris to REA Director Cooke.*

"National interest establishes the objective of providing our rural people with electric power through the cooperative effort of the whole country. The Federal Government alone has interests coextensive with the millions of rural customers and the many power producing and distributing units which would serve them, and only the government is in a position to exert the leadership necessary to bring them together. Federal assistance to agriculture throughout the whole of our history has been established as an appropriate function of government..... Because it shares the obligation to give our farm people their due, a just system of financial aid is warranted."—*REA Director Cooke to Senator Norris.*

"Our present rural customers bring us an average gross annual income of less than $30 each. Until this can be increased to $50 we must continue to serve them at a loss. Sound economics dictates that such a losing policy cannot continue for ever. Yet we are confronted by the almost unsurmountable obstacle of the incapacity of these customers to make the initial investment in equipment that will permit them to increase their use of electric energy."—*A Western utility executive whose company has been liberal in extending rural lines.*

Somewhere in the wide gap between the theories of Messrs. Norris and Cooke and the purely practical view of this utility executive, the industry must look for the final answer to the problem of rural electrification which is rapidly becoming a national issue. Continuous propaganda has aroused rural consciousness to the point where constant pressure for action will be maintained on Congress and on whatever Administration happens to be in power. Will the outcome be another development such as the subsidized system of rural free delivery of mail? Keen observers believe that this possibility is not so remote as it might appear at the moment.

Director Cooke says that "electric power has become one of the basic essentials in our capacity to live, to produce and to consume. It is a social necessity." To bring it to half of the farms of the country he estimates that one and one-half billions must be spent during the next ten years and he believes that a third of this expenditure may eventually be self-supporting. Call it fantastic; call it uneconomic; call it by any name, yet the conclusion is almost inevitable that it *may* come about.

With all its fantasy and theory, the program holds out some definite advantages to the electrical industry. There are obvious benefits for the manufacturers who would supply the equipment. The market for appliances it would create can only result in greater production with consequent lower prices. And the far-sighted utilities who recognize its inevitability can at least be prepared. Fortunately here in the West the industry has led in rural electrification. This leadership should continue; can continue.

August Frederick Hockenbeamer

AS QUIETLY and humbly as he worked, death came to August Frederick Hockenbeamer, the stenographer and clerk who learned finance and rose with his knowledge and painstaking, honest work, to become president of Pacific Gas and Electric Co. As a captain of industry, Mr. Hockenbeamer never wore spurs that clanked, nor gold braid to dazzle. His job was to balance the books and to keep his utility company sound and solvent.

It was always regretted that Mr. Hockenbeamer did not discard his shyness and reserve, drop some of the details that he nursed personally to the end, and let the public meet and know him more. He made such a wholesome impression on public or employes every time he did rise to say a few pointed, yet dry remarks. He had a quiet humor that won friends. When he explained them, the technical financial difficulties of utilities seemed simple and fundamental, as they really are.

Among his achievements is listed the beginning of customer ownership. Indeed he came to California to assist P. G. and E. through one of its early problems of financing to meet the growing demand for electricity. He foresaw that the company would need more money to expand as the public demanded more and more electricity. He was impressed, he often told, that the customers who were to receive the

benefits of electrification should be given an opportunity to assist in financing its growth. The plan solved a major monetary problem and established a new idea that has been adopted by practically all utilities and many industrial concerns.

Having asked his company's customers to help finance its growth, Mr. Hockenbeamer felt a deep rooted responsibility to these same customer-owners, no less than to employes and the general public. The business must be conducted economically and with reasonable profit. This has been no easy task during the past few years, and the personal drain upon his energies which this responsibility entailed shortened his useful, quiet life.

There was little drama in this president's life, unless one appreciates the deeper significance of that valiant struggle August Hockenbeamer made to maintain his company on even keel during the worst financial storm the nation has known. That sort of achievement is not spectacular. But what strength of character it takes. And what a monument it leaves—a truly sound and stable public service enterprise.

Prize Paper Contest

AGAIN the electrical industry brings its problems to the rank and file of the membership for solution. All branches have contributed material for the eight problem papers, presented by the Pacific Electrical Association, which are reproduced elsewhere in this issue. These papers point out the most prominent stumbling blocks in the path toward universal electrification of the home, farm, factory and office. They ask everyone for their ideas on methods to eliminate these retarding influences.

Definite progress resulted from last year's contest because of the wholehearted participation of some 1400 members of the industry. While all of the contributions were not immediately applicable, the contest was of inestimable value in stimulating the thinking of the industry to the end of increasing its volume of business, strengthening its position with the public and rendering an increasing measure of public service.

No industry stands still. It either progresses or goes backward. This is particularly true in the case of the electrical industry. Its every member must be on the alert constantly to devise ways of serving customers more economically, to forestall the continuous developments of competitive power devices, to insure public good will and to do these things on the sound business basis that will permit the industry to continue to contribute to the welfare, comfort, and prosperity of the community.

Therein lies the value of this new contest. The more contestants that enter, the greater will be the benefits derived not only for the industry as a whole but also for the contestant personally, because a man that is thinking about his job is the man that is preparing himself for greater responsibilities. The industry needs and wants members that think. By entering into this contest, for the $680 of prize money, you are showing your determination to grow with your industry, to build it and, in so doing, to insure participation in its future prosperity.

To a Showman

WHEN the captains and the kings depart, columns are written of their lives and accomplishments. Often the privates pass on, unknown soldiers of the industry, without a line. Let us pay a tribute, this once, to a "non-com" of the industry whose sudden death points to a great void in this business which gives us all a livelihood. Only once in a lifetime does fate so mix the elements of character, experience, background and imagination into one unique personality as to produce a real show man. To replace such a man takes a dozen men, each with but one of his versatile characteristics.

Such was Frank Bevan, showman, magician, druggist, window dresser, undertaker, small town boy, medicine showman, lighting salesman and display and advertising artist. Pacific Gas and Electric Co. had been fortunate enough to pick him from behind a drug counter in Marysville. From lighting salesman he became supervisor and then his showmanship was discovered and the last few years he had been worked for all he was worth on displays and sales shows.

The pity of his early passing lies in the dearth of such showmen in our industry—and the industry so needs showmanship just now. It has done so creditable an engineering and organization job, but it so needs interpreting and dramatizing to the public. Bevan often let his brilliant imagination run riot on the possibilities of dramatizing the industry. But the industry moved too slowly to utilize his gift while he was still alive. He had such dreams of what he might do at the 1938 exposition in San Francisco to tell the story of private utility achievement. His was individual initiative itself at work—and hence he knew how to illuminate it so that the public might appreciate it too.

If there is any lesson the industry may learn from this extraordinary "non-com," it is perhaps that it must not wait too long to give a showman his cue. For now the scene is "struck" and the performance is ended.

Significant Trends + + +

[*Signposts which point the road to improved business or method, brief, pertinent, useful hints as to HOW someone has blazed a new trail*]

Offer Customers Tariff Protection in B. C.

With a view to forestalling any tendency to defer purchases of the major electric appliances on account of the new tariff adjustment to go into effect on Jan. 1, between the United States and Canada, the British Columbia Electric Railway Co. has assured potential purchasers in large space in newspapers throughout its territory that it will give

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...in Merchandising

them protection in the event of price reductions resulting from this agreement.

The company states that it will readjust prices on refrigerators, washing machines, radios, ranges, and cleaners purchased from them between Nov. 22 and Jan. 15 in accord with any reductions taking place as a result of the effects of the new trade agreement.

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• A NEW G.E. HOME LAUNDRY INSTITUTE has been added to the other home institutes of the General Electric Co. This one, however, instead of being at Nela Park, is located at the company's merchandise department, Bridgeport, Conn. Its purpose is to train the personnel of distributors and dealers and to act as a laboratory for research and development work on home laundry methods. Mrs. Ruby G. Littlefield, Director of Home Laundry Service, is in charge.

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• INCANDESCENT SUPPLY CO., wholesalers in northern and southern California, this year have two traveling showrooms to display appliance lines to their dealers for fall and Christmas purchasing. The traveling truck idea was first used three years ago by Ed Burkell of this company with such success that an additional truck was added this year for use in southern California. The idea in effect is a traveling sample case of electrical appliances and has resulted in increased business.

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• AN ELECTRIC RANGE CONNECTING CABLE made of rubber, 30 in. in length, containing two No. 8 and one No. 10 wire, and designed to fit all standard range receptacles, is being offered range departments of utilities at $1.45 each by Electromaster. It is so designed as to be adaptable to any make of range.

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...in Lighting

Lighting Institute Held In Vancouver, B. C.

A three-day gathering was recently held in the auditorium of the British Columbia Electric Railway Co., Granville Street, Vancouver, B. C., under the direction of Walter E. Potter, lighting director of the General Electric Co. at Portland, Ore. The gathering was known as a Lighting Sales Institute, and more than 100 architects, optometrists and lighting engineers attended the sessions, which were similar to those held in large United States cities during the past few months.

The latest ideas in commercial and residential lighting were revealed, and ultra-violet lamps, "black light," and modern developments in architectural use of light for exteriors and interiors were exhibited.

The sessions opened at 9 o'clock on Monday morning, and continued through until Wednesday afternoon.

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Take Lighting Course to Prepare Building Fronts

FIRST activity undertaken by the "Modernization for Profit Council" in San Francisco has been the starting of a series of lighting schools for various crafts outside of the electrical group. This council's program, as announced last month in *Electrical West*, is for the purpose of inaugurating movements for the "face lifting" of business buildings in various business areas of that city. The actual program is to begin after the first of the year, but in preparation for this Clark Baker, chairman of the council, offered those in other crafts a course in lighting which would prepare them to make advantageous use of lighting in architecture for the program.

The first class was held Tuesday, Nov. 5, and covered the subjects of "Illumination Fundamentals," "Incandescent Characteristics," and "Luminous Tube Characteristics." The second subject was covered by Walter Carlson, Incandescent Lamp Department, General Electric Co., and the luminous tube characteristics were covered by Harold Owen, of the Electric Products Corp., Oakland. The illumination fundamentals, using a smoke box, were covered by Bob S. Prussia.

Succeeding meetings were scheduled to cover the subjects of "Terminology," "Science of Seeing," "Light Reflection and Transmission Factors," "Brightness," "Glare," "Calculations," "Applications of Direct, Indirect, and Semi-Indirect," "Adequate Wiring," with a final lesson on "Color Fundamentals of Pigment and Light With Their Uses and Abuses." The end of the session was to be a caravan trip to Stanford University illumination laboratory Nov. 29.

Speakers for the other subjects are all to come from the Illuminating Engineering Society. At the beginning there were 26 enrolled from the various building crafts outside the electrical group, with about 15 enrolled from the Electrical Contractors Assn.

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• A WINDOW DISPLAY for Christmas selling of I. E. S. lamps has been prepared by the National Better Light-Better Sight Bureau, 420 Lexington Ave., New York. In seasonal colors and decorative scheme, the display is made to use with an I. E. S. lamp.

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...in Wiring Rules

Petition Denver Officials for More Inspectors

A strong protest to the mayor and city council of Denver was made by committees representing the Electrical League of Colorado and the Rocky Mountain Electrical Assn. in a resolution presented Nov. 5.

The resolution points out that inspection fees to the city exceed the cost of operating the inspection department and that the surplus is being absorbed by other departments of the city instead of adding to the staff of the inspection department, which is inadequate to take care of electrical inspections at the present time.

The resolution urges the council to increase the inspection department to a minimum of 6 qualified inspectors whose salaries are to be taken from the operating revenue of the department and that any surplus be used to acquaint the public with the facilities of the de-

partment as a safeguard to life and property. The resolution was submitted to the council prior to the formation of the new budget for 1936, in the hope that consideration would be given to the need for an increase in the inspection personnel.

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• ITS FIRST MEETING following the annual convention at San Diego was called by the Southern California Chapter International Assn. of Electrical Inspectors, Nov. 20 at the Los Angeles City Hall. A full report of the meeting had not been received at the time of going to press, but on the program was scheduled the election of the chapter officers, discussion of the 1935 National Electrical Code, a talk on sequence meter installation by L. Lepperman, construction superintendent, City of Glendale, and report on the San Diego convention, and discussions of inspectors' problems. J. H. Crannell presided.

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• OFFICIAL INTERPRETATIONS of the 1935 edition of the National Electrical Code have been issued by the International Assn. of Electrical Inspectors in pamphlet form, available to members as well as to the trade upon request. The interpretations are those made up to Sept. 1, 1935, by the Electrical Committee, the body which writes and revises the code.

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• A SUMMARY of contractors licensing laws in the various Western states is contained in the November issue of Western Construction News, page 321. An excellent table gives at a glance the requirement in Arizona, California, Idaho, Montana, Nevada and Utah, as well as listing registration and renewal fees. In Arizona, California and Utah all contractors are affected, whereas in Idaho, Montana and Nevada only public works contractors are included in the provisions of the law.

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• DEFINITE RULES for the provision of permanent wiring for portable electrical or gas appliances have been issued by O. Barnwell, building inspector, City of Beverly Hills. The bulletin was issued to clear up misunderstanding on the subject arising from gas ranges equipped with flimsy lighting units and clocks. It defines the reasons for its stand in setting forth clearly its requirements for substantial and well protected wiring.

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• A NEW APPRENTICESHIP act has been enacted by the Province of British Columbia which affects electrical contractors in Vancouver and Victoria, B. C. Under its provision a minor over 16 years of age may not engage in any designated trade for a total period of more than three months unless he is covered by a contract of apprenticeship. The act also provides a code of fair regulations under which youths may apprentice themselves. No period of apprenticeship is to be for less than two years, although the Council has power to authorize the variation of the contract form to meet special requirements of any designated trade.

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...in Construction

• GEORGE KATZ, proprietor of the Reliable Electric Co. in San Francisco and more lately connected with various wholesaling firms, has opened a unique clearing house for obsolete materials and appliances at 1434 Howard St. In cooperation with all the wholesalers in the San Francisco area, Mr. Katz plans to offer broken lines, obsolete materials, damaged materials and close-outs to the trade at prices in line with the type of material it is. He has set a minimum price for an item of 50 cents. The "Merchandise Clearing House", as it is called, is strategically located on the ground floor of the building occupied by the Electrical Contractors Assn.

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• FOR APARTMENT HOUSES and hotels where emergency lighting is required on the exit lights a new type of panel, recently developed by the Square D Co., is finding considerable favor both in new installations and in the remodeling and modernization of old premises. The emergency lighting is placed on an automatic throwover switch which is electrically interlocked with the main switch so that in case firemen throw over the main switch the emergency lighting circuit is automatically cut in ahead of the main switch and continues to operate until restored to the main circuit. Such a panel saves the installation of a separate meter and saves the consumer a minimum charge on a separate meter as well as providing an efficiently operating mechanism. Extensive use of the new type of cabinet is being made in Oakland.

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...in the Motor Shop

"LET'S CREATE A NEW ERA" is the admonition given both those who sell or install electrical or industrial equipment in a booklet prepared by the McGraw-Hill Publishing Co. It expounds the opportunities for modernization under the new financing made possible by the liberalizing of Federal Housing Act loans. Loans up to $50,000 per plant are now available to modernize plant and equipment. Credit made available to industry for installation of ventilating, air conditioning, electrical and machinery improvement allows plans for improvements to be carried forward in plants where hesitancy has been felt in the past because of the difficulties to obtain means to finance them. The new plan protects commercial or manufacturing borrowers against the unexpected calling of loans and makes possible expansion of facilities which could not be financed up until this time. It also offers an opportunity to the industrial electrical supplier or contractor to sell modernization and to obtain his money quickly.

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...in Engineering

Special Connections Simplify Wiring of 3-Phase Bank

An instance where the cooperation of the manufacturer enabled appreciable simplification of plant wiring is illustrated in a recent installation of 3, 150-kva transformers at the Avon refinery of the Associated Oil Co. M. A. DeLew, electrical engineer for the oil company, suggested that the bus structure could be minimized if the transformer leads were brought out through bushings arranged as shown in the accompanying photographs.

It can be seen that the outside transformers of the bank have the terminals arranged so as to be adjacent to the center transformer. The photograph showing the partially completed bus connections indicated the relative simplicity and short bus runs that this construction makes possible. The transformers were built by the Gardner Transformer Co. of Oakland, Calif.

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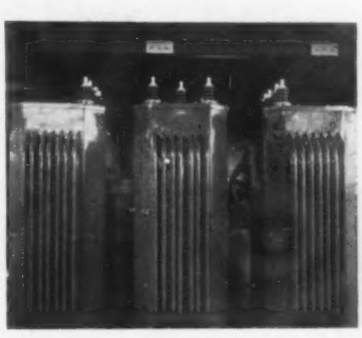

Left—Three 250-kva. transformers, constructed with specially placed bushings to simplify connections. Right—the construction makes possible the complete elimination of bus supports and permits short bus runs as well as adding to the neat appearance of the installation

News of Note + + +

A. F. Hockenbeamer, P.G.&E. President, Dies Suddenly

August Frederick Hockenbeamer, president of the Pacific Gas and Electric Co., died suddenly on Nov. 10 in Berkeley from a heart attack following a short illness. Physicians attributed his death to a state of general exhaustion due largely to overwork.

Mr. Hockenbeamer was 64 years old. He was born at Logansport, Ind., March 6, 1871. His life is a romantic history of a boy who forged ahead from a lowly beginning. His career began in 1887 in the division headquarters of the Pennsylvania Railroad, where he wielded a broom and shook down ashes as "third

A. F. HOCKENBEAMER

floor janitor". From 1887 to 1903 he was in railway service with the Pennsylvania line, Baltimore & Ohio Railroad and Chicago, Rock Island & Pacific Railway. In 1903 he became associated with N. W. Halsey & Co., investment bankers in New York City.

In 1907 this company agreed to form a syndicate to underwrite a $6,000,000 bond issue for Pacific Gas and Electric Co., in which they were large stockholders. Mr. Hockenbeamer came to California to investigate the company's properties and prospects. Instead of returning to New York he stayed with the company as comptroller. Six months later he became treasurer of the company and in 1927 was elevated to the presidency. In 1914 he achieved national fame when he inaugurated the plan of customer ownership. He was a trustee of the Edison Electric Institute and held many positions in various industry organizations.

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• RECEIVERSHIP OF THE ARIZONA Power Co. was entered recently in the Federal Court when Judge Fred P. Jacobs approved a reorganization plan for the Arizona Power Corp. as successors in interest and allowed the fees and expenses of the receivership totaling slightly over $60,000. The reorganization of the company involves refunding of a number of outstanding obligations already approved by stockholders and creditors. The company was admitted to receivership in August, 1934, under section 77-B in the National Bankruptcy Act.

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Boulder Power House Is Nearing Completion

Construction of the Boulder Dam power house is virtually completed and the initial machinery is now being installed for the first production of power which will be sometime late in the summer of 1936. On Nov. 20 the power house structure had been finished except for the final pour of concrete on the roof and the placing of windows.

Four of the 115,000 hp. turbines and one of the 55,000 hp. turbines are being installed at the present time. Two of the turbine scroil cases have been completed. Two of the armatures for the generators had been received and were being assembled.

Installation of penstock pipe was 75 per cent complete and pouring of anchors and thrust blocks in the penstock tunnels was in progress. The valve house structure, located on the canyon wall above the power house, had been completed and ten of the twelve 84-in. needle valves had been installed. Fabrication of steel pipe for the project will be completed in December, officials of the Babcock and Wilcox Co. have announced. Installation of the pipe will not be completed until May, however. On Nov. 15 the lake back of the dam was 79 miles in length, having receded 6 miles since the high recording on July 31. The flow of the river is less than the amount of water being released for use below the dam and is not expected to increase until the spring floods.

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• MORE RAINFALL is predicted for California during the coming winter, according to computations made by Dr. George F. McEwen, Physical Oceanographer at the University of California Scripps Institution of Oceanography, La Jolla, Calif. Dr. McEwen has conducted investigations since 1916 and bases his predictions on ocean temperatures. Lower than average temperatures in San Diego are predicted and a general resemblance of 1922-23 weather conditions throughout California are indicated from his calculations.

J. B. Black Becomes New P. G. & E. President

James B. Black, formerly vice-president and general manager of the Great Western Power Co. and more recently vice-president of the North American Co., with headquarters in New York, has been named president of the Pacific Gas and Electric Co. to succeed the late A. F. Hockenbeamer. Although born in Sycamore, Ill., Mr. Black can almost be classed as a Californian, having come West with his parents at the age of 10. He was graduated from the Lick School in San Francisco in 1908 and from the University of California in 1912 as a mechanical engineer.

JAMES B. BLACK

His first position in the electrical industry was with the Great Western Power Co. as service inspector. His career subsequently was a phenomenal one. Entering the commercial department he rose rapidly, being appointed general sales manager in 1918. In 1922 he became vice-president and general manager, a position he held until the consolidation of Great Western and P. G. & E. in 1930.

While in California he was always active in the affairs of the industry. He was president of the Pacific Coast Electrical Association during the administrative year 1922-23. In addition he served a number of years as a director of the California Cooperative Campaign, the predecessor organization of the Pacific Coast Electrical Bureau.

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• PROPOSALS for the formation of the Paso Robles Municipal Utility District in San Luis Obispo County, Calif., were defeated at a special election on Nov. 6. The total vote was yes, 529; and no, 593. Approximately 76 per cent of the registered voters in the district cast ballots at the election.

Municipal Electric Plant Voted at Delta, Colo.

Taxpayers at Delta, Colo., by a majority of 239 ballots, voted Nov. 5 to erect a municipally-owned light and power plant. This was the third time the issue has been submitted at an election. Previous elections were held in 1929 and 1930 at which the proposal was submitted. The recent balloting was inspired by an offer of a PWA loan and grant amounting to $197,000 for the purpose.

Immediately following the Delta election, Western Colorado Power Co., which for several years has been supplying the community with electricity without franchise, filed an injunction in the District of Columbia supreme court temporarily restraining Secretary of the Interior Ickes from making the PWA loan and grant for the Delta project. The company charged that no constitutional authority is vested in PWA to loan in such matters; that the plan was devised by the administration to afford a "yardstick" by which rates of private utilities could be measured and regulated; that the company's $350,000 investment to improve service to Delta would be seriously impaired.

Delta city officials have announced that the municipal plant will be built regardless, since the election authorized the city council to proceed via the government loan and grant "or any other feasible plan."

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Washington Farmers Obtain Rural Service

More than 200 farmers in eastern Washington have obtained electric service in the past eight months under a special extension plan which has been worked out by the Washington Water Power Co., according to John F. Farquhar, general agent.

"These farms could not be served under the usual standard extension policy which conforms to the state rules that the company cannot build lines unless the anticipated revenue justifies the expense," stated Mr. Farquhar. "Under our new plan we furnish engineering advice and assistance, the farmers build their own lines and we provide transformers and meters and give them the same rate as the nearest town customers."

No farmers in this territory have, as yet, taken advantage of the financial assistance offered by the Rural Electrification Administration, although the farmers and their organizations have received information from the administration outlining the requirements for such loans.

Under the Washington Water Power Co. plan the farmers are building their own lines at a cost of about $400 cash outlay. The company furnishes engineering advice, obtains franchises and rights of way and agrees to do maintenance work at cost when requested.

The company now has several hundred individual and customer-owned lines with a total of 500 such farmer accounts. In addition the company serves more than 5,000 farmers on lines built by the company throughout 22 counties of eastern Washington and northern Idaho.

•

L. A. Power Bureau Refunds RFC Notes

Power revenue bonds to the extent of $22,799,000 of the Los Angeles Bureau of Power & Light have been sold to a syndicate headed by Brown Harriman and Company, Inc., of New York, on a basis of 4 per cent. The bond issue was passed in an election on Oct. 29 by a vote of 99,538 yes, to 21,549, no. The issue is to be used to refund notes held by RFC for the construction of the Boulder Dam transmission line.

The RFC notes which carry an interest rate of 5 per cent for the first five years and 6 per cent thereafter will be redeemed by the proceeds from the sale of the newly authorized issue. In urging approval of the bonds by the voters the Power Bureau promised a 10 per cent electric rate reduction effective Jan. 1. However no ordinance incorporating reduced rates has as yet been submitted to the Los Angeles City Council.

•

Urges Municipal Utilities Interconnect Systems

E. F. Scattergood, chief electrical engineer and manager of the Los Angeles Bureau of Power and Light, gave the opening address at the recent Conference of Municipal Plant Managers at Kansas City, Mo., Nov. 7 and 8. He discussed rural extensions in the City of Los Angeles to some 10,000 families and fruit growers, as well as a plan for effecting an interconnected system of public plants throughout the Pacific Coast. He also urged the need of nationwide cooperation between city-owned utilities for the exchange of technical information, experience and for defense. A committee consisting of two delegates from each state was appointed to meet with the executive committee of the National Municipal Utilities Assn., of which Mr. Scattergood is chairman, to guide in the formation of a working association. The committee on national organization proposed a revision of the constitution of the association, adding the clause "The Association shall be non-political and non-partisan, and its activities shall not include propaganda."

Washington Power Bill Held Constitutional

An opinion sustaining a legislative act of 1931 known as the "District Power Bill" under which Benton county, in central Washington, was incorporated as a power district, was filed recently at Ellensburg by Judge Arthur McGuire of the Kittitas County superior court, who presided at a hearing October 17 at Prosser on an action brought to test the constitutionality of the measure.

Judge McGuire ruled that the act was not unconstitutional on the grounds urged against it for the reason that the district was in fact created by the legislature and its creation involved no exercise of arbitrary power. He held that the fact that certain officers of the county were required ex officio to serve in like capacity for the public utility district and without compensation did not invalidate the act and that the fact that the utility district was superimposed upon another municipal corporation likewise did not affect the validity of the act.

The action was brought by land owners in the county and the Pacific Power and Light Co.

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Pioche-Boulder Dam Transmission Line Financed

Indications that the proposed transmission line from Boulder Dam to Pioche, Nev., will be constructed in the near future were contained in a recent announcement by E. H. Snyder that bonds of the Lincoln County power district to cover the cost of the line had been sold. The announcemnet stated that PWA will contribute $336,000 as a direct grant and will purchase $264,000 of the bonds and that the remaining $400,000 in bonds has been subscribed by various individuals and concerns, including a $50,000 block purchased by the Nevada Industrial Commission. The statement has been made that the line construction will be carried on under force account by the district.

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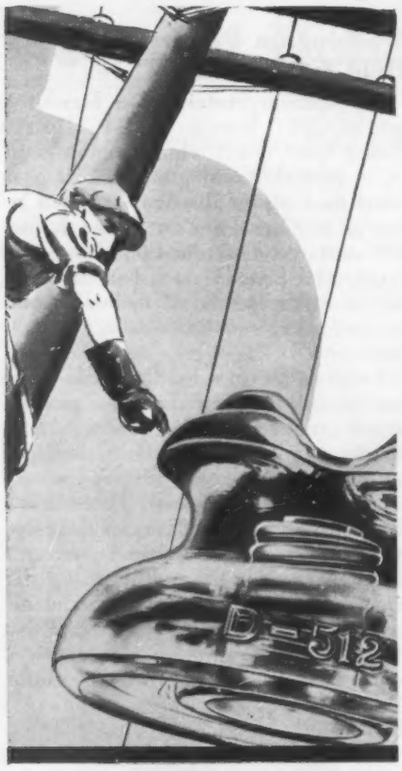
• INVITATIONS have been extended by the Prize Awards Committee of the Edison Electric Institute to all electric light and power companies operating in the United States to compete for the Charles A. Coffin Medal for 1936. Under the terms of the Foundation as established by the General Electric Co., the award will be made to that company which during 1935 has made a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry. Presentations must be made not later than April 1, 1936.



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Power Line Removal Costs Protested by Utility

Answering agitators for the removal of power lines in the vicinity of airports, E. F. Scattergood, chief electrical engineer, for the Los Angeles Bureau of Power & Light, suggested that the airport owners should bear the expense for such relocation. Mr. Scattergood's ideas on the subject are set forth in a letter to the Board of Supervisors. He states that the Bureau does not construct hazardous lines along the borders of airports and when the airport operators wish the existing lines removed in the interest of safety and for the benefit of the airport it is unfair to expect the utility to do this without being compensated for such removal.

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• VOTERS OF SPRINGFIELD, Ore., virtually surrounded by the municipally owned power system of the city of Eugene, rejected a proposal to engage in the power and water business, in a recent election. The voting was 435 "no" and 266 "yes." Important factor in deciding the public opposition was the declaration by the Mountain States Power Co., which serves Springfield, that it would move out of town all of its properties that could be moved. This would mean the loss also of a valuable business asset to the Booth-Kelly Lumber Co. there, which sells mill by-products as fuel for the power company's steam plant. This sale, Booth-Kelly officials explained, just about represents the margin between profitable and unprofitable operation of the lumber mill and might cause its closing also. Another main consideration influencing the voters seems to have been that the town would lose a substantial amount of taxes through municipal ownership, as well as losing these two business enterprises.

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• PERMISSION was granted the Southern Sierras Power Co. after considerable discussion by the City Council of Riverside to bring its own power over the streets and alleys of the city from its plant on North Main St. to its Riverside office to be used for all electrical purposes in its own building. The installation of a $25,000 air conditioning plant in the building and its effective advertising of air conditioning to the people of the city of Riverside were cited as benefits which would accrue from this move by Albert Cage, of the power company, in pleading before the Council. The city of Riverside, which has its own municipal distribution system, would thus benefit also from the example of the air conditioning system which the power company had installed.

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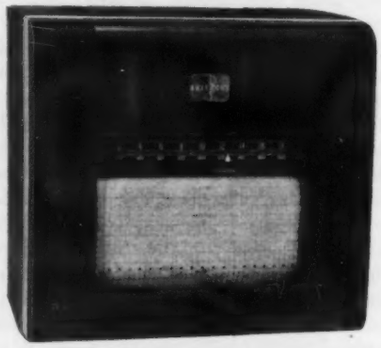

THE most notable advance in years in pyrometer construction, this new Bristol's Wide-Strip Potentiometer Pyrometer reflects throughout the touch of master craftsmanship. From the handsome lustrous case designed by one of the country's foremost industrial artists to the super-sensitive yet heavy duty galvanometer of Weston precision, quality prevails.

This latest achievement by the pioneer builders of pyrometers sets a new standards of high temperature measurement by the potentiometer method. It possesses a surprisingly simple mechanism,—for measuring, balancing and recording. Although of fine accuracy,—it welcomes hard service.

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WIDE-STRIP PYROMETER

• THAT THE ELECTORATE of Portland may vote at the primary election in May next year on whether or not the city shall acquire the properties of the Northwestern Electric Co. in that city on the expiration of its franchise, October 22, 1937, has been definitely indicated in recent meetings of the City Council. The expiring franchise provides that the city may purchase the company's properties in the city on the expiration, and the Commissioner of Public Utilities has recommended that the matter be placed on the ballot for a vote of the people. Definite action has not been taken by the council, however, it being stated that the form under which the proposal shall be put to the voters has not been determined.

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• THE CITY COUNCIL of South Pasadena, Calif., has instructed the city engineer to prepare plans and specifications to advertise the bids for nineteen mercury vapor light units to be used on Fair Oaks Ave. The city has awarded bids for 80 steel poles to the Union Metal Pole Mfg. Co., to be installed along Fair Oaks Ave. replacing poles in the center of the street. The mercury vapor lights will be attached to the new poles. Fair Oaks Ave. is a heavy traffic thoroughfare carrying much of the automobile and street-car traffic between Pasadena and Los Angeles. The city council also is considering the use of the mercury vapor lights on Mission St. which has recently been improved.

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• WORK HAS BEEN STARTED on a $75,000 project, including a transmission line and substation, which will connect the Arizona Edison hydroelectric plan on Fossil Creek, 40 miles south of Clarkdale, Ariz., to the Flagstaff Electric Light Co. Approximately $50,000 will be spent by the Arizona Edison Co. for a 40-mile transmission line and the balance by the Flagstaff utility in constructing a receiving station and other equipment. The new tie-line will insure adequate power for future growth in Flagstaff and vicinity.

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• IMPROVED BUSINESS conditions in Southern California are reflected in the use of electricity which reached an all-time peak for one day on Nov. 12. On that date the Los Angeles Bureau of Power & Light announced a peak load of 174,000 kw. The usual system peak on this utility's line occurs late in December. This is the first time in the history of the Bureau's operations that a record high was reached in November, indicating that December will probably surpass all previous recorded figures.

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LOS ANGELES SAN FRANCISCO

Discuss Commercial Cooking At Northwest Meeting

The need for improvement in certain classes of electrical equipment for commercial cooking establishments and cheaper wiring for this equipment were two of the principal conclusions reached at a conference of commercial cooking representatives of member companies of the Northwest Electric Light and Power Association, Seattle, recently. The meeting was held under the auspices of the Commercial and Industrial Sales Bureau with O. C. Mayer, Idaho Power Co., Boise, the chairman of this bureau as chairman of the conference. It was attended by 21 representatives from ten companies in the territory of the association.

Discussion of the advantageous features and short-comings of equipment offered by various manufacturers arose principally under the program subject, "Modern Electrical Equipment and Customer Acceptance," led by D. O. Bergey, Northwestern Electric Co., Portland. The outcome of the discussion led to the formation of a sub-committee of the Commercial Cooking Committee, chairmanned by A.K. Gaylord, Portland General Electric Co., charged with the responsibility of bringing in recommendations for such changes in design and manufacture as would benefit the field men selling this equipment to their commercial customers. Changes in wiring methods and practices for heavy duty equipment are to be recommended by another sub-committee under C. L. Jacklett, Pacific Power & Light Co., Yakima, chairman, and are to be brought to the attention of the proper authorities through the wiring sub-committee of the Engineering & Operation Section.

A third need of the field men in the commercial cooking department of the business was found to be for more promotional material, and Carl Hoffman, The Washington Water Power Co., Spokane, was appointed chairman of a subcommittee to recommend ways and means of providing such material.

The conference was conducted by having open discussion on pre-arranged subjects led by various members. The program subjects were: "Our Problems," by O. C. Mayer; "What Are We Selling?" by L. B. Gawan, Utah Power & Light Co., Salt Lake City; "Modern Cooking Trends in Competitive Equipment," by Carl Hoffman; "The Three C's in Selling Commercial Cooking," by A. K. Gaylord; "Modern Electrical Equipment and Customer Acceptance," by D. O. Bergey; "The Potential Market," by Jack Dugan, Puget Sound Power & Light Co.; "Revenue Value of Cooking Load," by C. L. Jacklett, and "Ventilation and Air Heating of Restaurants" by U. K. Petersen, Northwestern Electric Co.

Two half days of the conference time were devoted to inspection of such all-electric kitchens and bakeries in Seattle as the Washington Athletic Club, Providence Hospital, American Cake Co., the Best Pie Co., Northwest Bakery, and the ferryboat, Kalakala. A display of some of the latest equipment on the market was participated in by Edison General Electric Appliance Co., the Washington Stove Works, Everett, Wash., F. S. Lang Manufacturing Co., Seattle, and Wells Manufacturing Co.

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• SUBSTANTIAL REDUCTIONS in electric rates in Globe and Miami, Ariz., both served by the Arizona Edison Co., have been ordered by the Arizona Corporation Commission. The new rates became effective Nov. 1. All schedules were affected by the changes with the major cuts being made in residential lighting and in residential combination lighting, cooking and refrigerating.

QUICK Convertibility

This installation for the American Can Co., at Honolulu demonstrates many features of the unique Square D Saflex design for panels and switchboards.

Note the appearance of the board, particularly the safe dead front of both the panel and the switch units either with doors open or closed. See how simply the switch units are designed; bear in mind that they may be locked in either "on" or "off" positions. A glance at the left hand panel reveals adequate provision for additional units, if future electrical demands require them.

The most important Saflex feature can't, however, be photographed: it's the quick convertibility and flexibility of these boards. Simply by changing the fuse jaws or clips to accommodate larger or smaller fuses, the Saflex design permits changing disconnect switches from one capacity to another in a matter of minutes! Desired capacities from 30 to 600 amps—230-575 v. may be obtained.

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...about People

Washington Water Power Names New Sales Managers

Appointment of three managers in the sales department of the Washington Water Power Co. has been announced by Lewis A. Lewis, assistant general manager in charge of sales.

Ross B. McElroy, merchandise sales manager, was named manager of residential sales and will have charge of all activities in that direction with a general program for increasing the use of electric service in the homes. He has been with the company since 1913 when he graduated from the State College of Washington with the degree of electrical engineer.

E. E. Scofield was named manager of industrial sales. A graduate of the Massachusetts Institute of Technology in electrical engineering, Mr. Scofield has been with the company since 1922.

A. H. Wegner was named manager of commercial sales. He graduated from the State College of Washington with the degree of electrical engineer, spent two years with the General Electric Co. at Schenectady and joined the Washington Water Power Co. in 1925.

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• FRANK L. ROBINSON has become manager of home laundry equipment sales for Colvin-Templeton, Inc., 871 Mission St., San Francisco. Mr. Robinson was formerly associated with L. H. Bennett Co., Ltd., and then with the Electric Appliances, Inc., in a managerial position. He will have charge of laundry equipment sales in the territory served by Colvin-Templeton, Inc., as distributor for Westinghouse appliances.

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• W. W. GLOSSER has been elected vice-president of the Pacific Coast division of Hubbard & Co., according to an announcement made by C. L. Peirce, president of the company. In his new capacity, Mr. Glosser will have charge of the company's operations in Arizona, Nevada and the three Pacific Coast states. He is well known in the industry, having been Hubbard's Pacific Coast manager since 1929. Prior to that time he was district manager in New York City.

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• FRED W. BRIDLER has been named assistant chief engineer in the production department of the El Paso Electric Co. He was formerly with the Navasota Division of the Gulf States Utilities Co. He succeeds J. A. Reich, who has been transferred back to the Virginia Electric & Power Co. by the Stone & Webster organization. Mr. Reich was formerly with the Virginia company.

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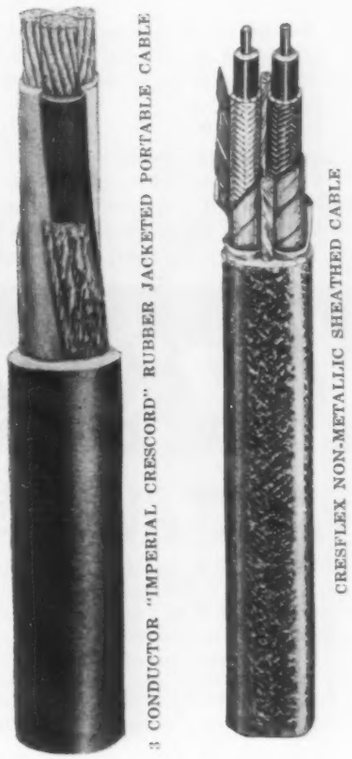

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Puget Sound Company Announces Promotions

A. L. Pollard, assistant general superintendent of light and power, and superintendent of steam heat of the Puget Sound Power & Light Co., with headquarters in Seattle, has been named general superintendent of light, power and steam heat, following the consolidation of his two former positions. Mr. Pollard, who came to Seattle in 1930 from the Boston offices of Stone & Webster, where he was a power engineer, succeeds Magnus Crawford, who becomes assistant chief engineer under George Quinan.

Other changes in executive personnel announced in the Seattle headquarters of the Puget Sound Power & Light Co. include: Reno Thatcher, superintendent of service, promoted to the engineering department. Mr. Thatcher is succeeded by Harry Tecklenburg, who was assistant superintendent of service. R. H. Johnson, formerly assistant superintendent of distribution in Everett, has been transferred to Seattle as superintendent of sub-stations.

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W. D. McDonald, Seattle manager of the Westinghouse Electric & Mfg. Co., was re-elected president of the Electric Club of Washington for the coming year. Serving with him as other officers of the club are: C. D. Helper, Trumbull Electric Mfg. Co.; W. M. Humason, Western Union Telegraph Co.; H. E. Plank, manager of the General Electric Co.; and J. R. Wells, Westinghouse Electric and Mfg. Co.

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San Diegan Made Edison Tax Counsel

Lane D. Webber, for thirteen years vice-president and trust officer of the First National Trust and Savings Bank, San Diego, Calif., has been appointed tax counsel for the Southern California Edison Co., Ltd., Los Angeles, according to the announcement of Harry J. Bauer, president of the company. Mr. Webber has resigned from his San Diego position and has taken over his new work with the Edison Co. He will continue to serve as a director of the bank.

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• J. C. Davidson of Hendrie & Bolthoff Co., Denver, Colo., died Oct. 15 after several weeks' illness. He was a charter member of the Electrical League of Colorado and at the time of his death was vice-president representing the distributors. Ross H. Adams has been named to succeed him as manager of the electrical department of Hendrie & Bolthoff Co.

Frank Bevan, P. G. & E. Showmaster, Dies

Frank Bevan, known to the electrical industry in northern California as its prime showman, died of heart attack Nov. 8, 1935. At the time of his death he was display manager for the Pacific Gas and Electric Co., the termination of a career as different, as colorful and as versatile as any in the industry.

Born in Wheatland, Calif., 1885, he spent his boyhood in Marysville, working after school in a drug store. At 20 he came to San Francisco and in three months of intensive study passed the State Board of Pharmacy with second highest honors, the youngest member of

FRANK BEVAN

the class. Somewhere in this period of his life he trouped with theatrical companies in the inland valleys of California and developed the dramatic technique and point of view which served him excellently through his life. Later he joined his father as an undertaker and became coroner of Marysville and head of the Morticians Association. Later he conducted an advertising agency of his own and from there became associated with P. G. and E. as a commercial lighting salesman. His results were spectacular because he applied showmanship to his selling. He was soon brought to the main office to head up lighting sales for the entire system.

His sales showmanship was recognized and he was given the responsibility for putting on the annual sales show for the company. In fact he handled all of its show activities, displays, expositions, and feature events.

For the Pacific Coast Electrical Assn. conventions and for San Francisco Electrical Development League affairs his talent was utilized on every occasion. At the time of his death he had in preparation another road show for the sales department to carry the 1936 sales program to each of its divisions. He had also been asked to prepare ideas for the forthcoming San Francisco World's Fair in 1938.

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That is one of the reasons why utilities from Maine to California now specify *Crapo* Galvanized Products on all new and replacement work.

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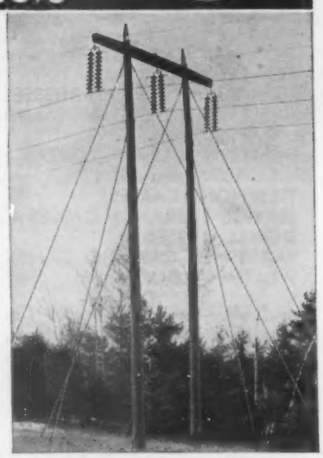

Typical installation of Cumberland County Power and Light Co., Portland, Maine. *Crapo* Galvanized Seven Wire Steel Strand used for guying.

Steel Strand

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Telephone and Telegraph Wire

Emeryville Westinghouse Plant Manager Dies

Maynard R. Davis, plant manager for the Westinghouse Electric and Manufacturing Co. in Emeryville, passed away recently at a hospital in Oakland following a few days illness.

Mr. Davis was born in Indiana and lived in Salt Lake City, Utah, before coming to California. For the last 30 years he has been connected with the Westinghouse Co. He had made his home in Berkeley for the last 15 years. He had been past president for two years of the Emeryville Industries Assn. and had been prominent in industrial affairs in Emeryville and Oakland.

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• WILLIAM A. HANBRIDGE, one of San Francisco's pioneer electrical men, died of heart attack at San Rafael, Oct. 28. Mr. Hanbridge, at the time of his death, was commercial lighting specialist for the Pacific Gas and Electric Co. for its North Bay Division, with headquarters at San Rafael. For many years before joining the sales staff of P. G. and E. Mr. Hanbridge was an electrical contractor in San Francisco, becoming at one time secretary of the San Francisco association. At a later time he had charge of all lighting activities for the San Francisco Division of the power company. He also served on many committees of the P.C.E.A. and was prominent in activities of the Illuminating Engineering Society.

•

• J. C. MORELLO, president of the California Electric Co., Oakland, died in that city, Nov. 23, from pneumonia following an operation. He was 47 years of age and began his electrical career in the contracting business in Butte, Mont. For many years he had been active in the affairs of the Electrical Contractors' Association and Motor Dealers' Association in Northern California. He was one of the respected and constructive elements in the electrical business and was highly regarded by his associates.

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• W. H. WOLFORD, superintendent of maintenance in the Tulare district of the Southern California Edison Company, Ltd., was electrocuted in the testing room of the Tulare substation on Nov. 13. He had been an employee of the company for 25 years.

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• GEORGE SPOTTISWOOD, electrical inspector in the Department of Electricity, San Francisco, died as the result of a stomach operation on Oct. 3, 1935. Mr. Spottiswood had been ill for some time. During the past several years Mr. Spottiswood has been assigned the specific duty of policing the San Francisco ordinance regulating the sale of electrical appliances and had done an outstanding job in conciliation of the various interests involved. He has been with the Electrical Department for a number of years.

•

• HARLAN KAUFMAN SCHEIBER, 58, purchasing agent of the General Electric Supply Corp., Salt Lake City, died of a heart attack Oct. 18. Mr. Scheiber first became associated with the American District Telegraph Co. in 1895; later joined Robert Nicol, who operated the Utah Electric Co. His later connections were with the Salt Lake Electric Supply Co., Capitol Electric Co. and its successor General Electric Supply Corp.

•

• WILLIAM J. ROBINSON, assistant treasurer of the Southern California Edison Co., died at his home in Los Angeles after a few weeks illness resulting from a heart complaint. He had been a member of the Edison organization for 23 years.

•

• T. A. STANTON, electrical inspector, Los Angeles, for many years, died at his home in that city recently after a long illness.

Announcing . . .

A New ENGINEERING AFFILIATION

A cooperative engineering, manufacturing and sales agreement has been concluded between the Chapman Valve Manufacturing Company and The Pelton Water Wheel Company whereby each will represent the other in their respective territories. The affiliation embraces the field of Automatic Control Valves for water works and sanitary services and brings to the West, under Pelton engineering supervision, the well known Cone type valve as designed for check valve, pressure regulation and liquid level control.

The Cone valve admirably complements the balanced plunger and angle type units offered by this company, permitting a wider selection of equipment to meet exacting installation requirements.

Pelton engineers are readily available for consultation with a view to the best engineering solution for each problem.

Complete details in Pelton bulletin No. 29 and Chapman bulletin No. 3. Ask for your copies.

The Pelton Water Wheel Company

HYDRAULIC ENGINEERS

120 Broadway NEW YORK | 2919 Nineteenth St. SAN FRANCISCO | Paschall Station PHILADELPHIA

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★ *Increase your sales*

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AND SPLICING COMPOUNDS

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•COMPLETE STOCKS CARRIED IN ALL 3 PACIFIC COAST POINTS

CLIFTON MFG. CO.
65 Brookside Ave. Boston, Mass.

...about the Trade

N.W. Pioneer Distributors Expand Lines, Staff

F. B. Connelly Co., pioneer electrical distributors, originally at Billings, Mont., has announced enlargement of its activities into related distributing fields. With its headquarters now located at Seattle, and branches at Portland, Spokane, Billings and Great Falls, the company announces the entry into distribution of hardware and housefurnishing specialties along with electrical appliances, radio and toys.

Founded 50 years ago in Billings by Senator F. B. Connelly, its business has been the distribution of electrical specialties, including refrigerators, washing machines and radio.

Display and warehouse facilities are being enlarged and a new $50,000 building is being constructed at Billings. A new 150-page catalog is announced to be released soon. The company also operates a finance division known as the Connelly Acceptance Corp., with headquarters at Seattle. The latter purchases dealers' retail time payment contracts resulting from the sale of products distributed by the firm.

Announcement of new personnel has also been made. Frank T. Parker, formerly Seattle branch manager of the Federal Truck Co., has been made credit manager of the Connelly branch at Portland. S. W. Leach, formerly auditor of Ernst & Ernst, is the new credit manager at the Seattle branch. Frank Porter, formerly assistant manager of the General Motors, Seattle branch, has been made purchasing agent at Seattle. It was also announced that Senator Connelly will celebrate his fiftieth business year and his golden wedding anniversary on Dec. 1.

•

• MEETINGS OF LEONARD DEALERS and distributors in the West have been held in Los Angeles and Portland early in November by H. W. Burritt, vice-president in charge of sales, Sam C. Mitchell, director of advertising and sales promotion, P. D. Sowell, advertising and sales promotion manager and J. J. O'Neill, manager of the major retail outlets division of the Leonard factory.

•

• TURPIN'S, old established electrical appliance and radio dealers of Fresno, recently moved to a new and well equipped store more centrally located at 1321 Fulton St. Besides a complete line of major appliances, a wide assortment of small appliances and floor lamps has been added.

Adaptor rings enable you to fit any range

CHROMALOX
Super-Speed RANGE UNITS

make "happy kitchens," gratified users, profitably busy dealers, and contented power companies — all because of their high speed cooking and their long service life.

Ask for the details of the tried and proven sales campaign.

EDWIN L. WIEGAND CO.
PITTSBURGH, PA.
Represented by
MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
524 S. W. Pine St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.
THE PETERSON COMPANY
1921 Blake St., Denver, Colo.

A NEW DEVELOPMENT IN DISPLAY LITE-ING FOR ALL SHELF MERCHANDISE

No. 888

S & M DISPLAY CASE LITES OPEN NEW FIELD FOR VOLUME SALES AND ELECTRIC LOAD BUILDING

Proper illumination of merchandise will increase sales in practically every type of store—featured products invariably sell faster when brilliantly lighted.

S & M Display Case Lites are specially designed to adequately illuminate any open shelf display of merchandise.

Drug Stores, Liquor Stores, Department Stores, Grocery Stores and Automotive Stores are just a few of the many types of retailers who are a ready market for Display Case Lites.

S & M Display Case Lites make a beautiful installation which harmonizes with the most modern interiors. The Lites are constructed of pure sheet aluminum, have a brightly polished aluminum cap, chromium rod and red lacquered outlet box. Completely wired, ready to install with conduit, wiremold, BX or flexible cord.

No. 888—9½" diam.....$7.00
Uses 200-watt inside frosted lamp.
No. 444—7" diam.....$6.00
Uses 100-watt inside frosted lamp.
Write for detailed information.

S & M LAMP CO. 36th & Broadway **LOS ANGELES**

G.-E. Merchandise Department Reorganized

Organization changes in the newly consolidated Appliance and Merchandise Department of the General Electric Co. will affect several men well known to the industry on the Pacific Coast. The changes resulted from the resignation of T. K. Quinn, vice-president, effective Jan. 1, whereby he becomes president of the advertising agency of Maxon, Inc. Charles E. Wilson becomes vice-president in charge of the new department and will have general supervision over all of the company's appliances activities, including factory, engineering and sales.

The new department will have four sales divisions with P. B. Zimmerman, formerly manager of the specialty appliance department, as general manager of appliance sales. The special appliance sales division at Cleveland will be headed by G. J. Chapman. Radio Sales Division will be in charge of R. J. Cordiner, former Pacific Coast manager of the Edison General Electric Appliance Co. Traffic Appliance Sales Division will be in charge of R. W. Turnbull, also a former Pacific Coast Hotpoint manager. Home Laundry Equipment and Cleaner Sales Division will be headed by D. C. Spooner, Jr.

John L. Busey becomes president of the General Electric Supply Corp. Mr. Busey started his career in the electrical industry in 1909 as a salesman for the Capital Electric Co. in Salt Lake City. In 1925 he became associated with the Pacific States Electric Co. as assistant to the president in charge of sales. In 1929 he went to Boston as New England district manager of the G. E. Supply Corp. Successively he became appliance sales manager and general sales manager of G. E. Supply Corp. and later manager of appliance sales of the G. E. Merchandise Department. In his new position he is now responsible for one of the largest distributing organizations in the world with 23 main houses, 11 local houses and 63 branches.

•

• C. B. (Cap) Kenney, prominent electrical contractor in the San Francisco Bay area, has announced that he and his brother, Roy Kenney, have purchased all the California interests in the NePage-McKenny Co., of which he has been joint owner and in charge of the California office for the past 21 years. The business is to be operated under the name of Kenney Brothers and is to be owned entirely by the two brothers. Officers are maintained in San Francisco at 7 Front St. and in Oakland at 128 Tenth St. Mr. C. B. Kenney has been active in the contractors associations of California, serving many times on the executive committee, both of the San Francisco and Northern California Chapter associations. Roy Kenney has likewise been active in contracting circles in Portland and was formerly in charge of the Portland office of NePage-McKenny Co.

•

• The Brown-Johnston Co., leading electrical concern of Spokane, has announced an expansion program with the purchase of the two-story heavy fireproof brick building at Railroad and Wall and a long term lease on the ground from the railroad, which has tracks alongside, according to Eric A. Johnston, president of the firm.

The building, 100 x 125 ft. has a full basement, making three floors which give 36,000 sq ft. Brown-Johnston will use the building for wholesale merchandise display space and warehousing. Shop and factory operations will be moved from the present retail location at N118-120 Lincoln, which will be maintained as a retail store. The Brown-Johnston factory has been handling such a growing volume of business that this expansion into a new location became imperative, it was said. The plating department will be doubled in size in the new location. The new quarters also will house the commercial refrigeration, air-conditioning, electrical contracting and wiring and shipping departments.

•

• Jack Hart, of Hale Bros. Inc., Sacramento, was elected president of the Sacramento Electric Appliance Society at a recent meeting.

• Atlas Electric & Engineering Co., 956 Folsom St., San Francisco, has been appointed the industrial agent for the San Francisco territory of Westinghouse Electric & Manufacturing Co., according to Charlie Shipman, president of the industrial contracting firm. The company has just recently moved to new quarters and has remodeled and enlarged facilities at its new location.

•

• W. D. Howze Sales Co., 422 Alpine St., Los Angeles, has been appointed representative in southern California and Nevada for the sale of Pyrex power and radio insulators. The appointment was made by W. H. Taubert, sales manager, Insulation Division of the Corning Glass Works.

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Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory.

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CONSULTING ENGINEER

Reports and Valuations, Public Utility Industrial Properties

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The New COLT-NOARK Cast Iron Dust Tight and Weatherproof Switches

Type "A" Dualbreak Switches cased in rugged cast iron boxes. Water and dust tight. Fusible and Non-Fusible. Install them wherever life for a safety switch is tough!

QUADBREAK AND DUALBREAK TYPE A SAFETY SWITCHES
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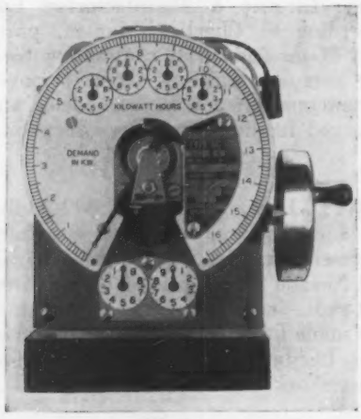
MOTOR STARTERS
METER SERVICE SWITCHES
COMBINATION RANGE AND ENTRANCE SWITCHES
RENEWABLE, INDICATING AND NON-INDICATING FUSES
FUSE ACCESSORIES
CAST IRON BOXES AND FITTINGS

PACIFIC COAST REPRESENTATIVE
H. B. SQUIRES COMPANY
San Francisco — Los Angeles — Seattle

COLT'S PATENT FIRE ARMS MFG. CO.
Electrical Division :: Hartford, Conn.

...in New Equipment



Portable Demand Register Checking Device

A portable checking device for type HG Sangamo demand register is announced by Sangamo Electric Co., Springfield, Ill. By mounting the demand register on this device, it is possible to make complete check on any standard Sangamo HG demand register, manually in a short time. By means of a gear shift, two scale positions of the friction pointers can be checked, and it shows at a glance the condition of the mechanism as a whole. It is also possible through its use to check register and pusher arm ratios.

●

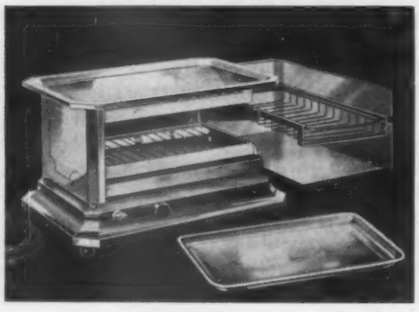
O-B Angle Clamp

Ohio Brass Co., Mansfield, Ohio, has announced a new angle clamp designed to simplify angle construction in rural line design. The new clamp permits the turning of any angle ranging from 30 to 120 deg. without the necessity of dead-ending the conductors and using jumpers. A special U-bolt design permits the clamp to be attached directly to a 6-in. suspension unit, either eye or hook type, without the use of intermediate fittings. Since the keeper-piece is reversible, having two sizes of conductor grooves, the one clamp will fit 41 different sizes and types of conductors.

●

Table Cooker

Kookador, an invention of a Californian, J. P. Freemon, and manufactured by The Burman Co., Los Angeles, is a new table appliance combining the features of a toaster, a grill and hotplate. It employs a Mark Time switch and by repeated plunges of a plunger can be set to time the opening of the door which carries the food rack. Action of cooking is accomplished by two chromel elements between which the toaster rack or grill tray swings freely on the door. The elements are on all the time during operation and thus provide high heat to accomplish the cooking quickly. When the determined time set has elapsed the door swings open itself on an inclined hinge. The top of the device can be used to cook pancakes, bacon or other table stove dainties, whereas the interior can be used to cook toast, grill sausages or cakes, or make waffles, etc. This device is the only one which makes an open faced cheese toast the way it can be made in a normal oven. Finished in chromium, the Kookador is priced to retail around $13.00.



●

Range Wiring Cap

Arrow-Hart & Hegeman Electric Co., Hartford, Conn., has just announced a new 90-deg. bakelite range cap for use with a surface range outlet. Rated at 50 amp., 250 volts, the new cap incorporates several advantages including ease and economy of installation. Wires enter straight into solderless connectors and a built-in adjustable clamp makes a tight, quick assembly. With the new cap rubber cord sets can be made up with two No. 6 and one No. 8, two No. 8 and one No. 10 or three No. 6 wires where it is permissible to use the neutral wire as a ground.

●

Special Blades on Anchor

By redesigning the blades of the Kearney 4-in-1 Hi-Tension 8-inch anchors, several decided advantages have been achieved, according to the manufacturer. Mechanical strength has been increased 50% and anchors may be

installed more easily. The blades of this anchor are designed to follow through the original cut in the side of the hole. They go into the earth in the path of the helix in a commonly termed "corkscrew action." Nut retainers are now provided on all Kearney expansion anchors. Full information on this anchor is offered on request.

●

Nine Westinghouse Appliances

Nine new household appliances have been announced by the Westinghouse Electric & Manufacturing Co., Merchandise Division, Mansfield, Ohio. Included are a streamline, 1,000-watt "Adjustomatic" iron that retails for $8.95; a new urn set known as the "Patrician" model listing at $17.95; a "Patrician" percolator retailing at $5.95; an all-purpose sandwich grill at $5.95; a waffle iron with heat indicator at $5.50; a turnover toaster at $3.50 and a "Cozy Glow" heater at $4.95. Of special interest is a new "Electro-Tray" set consisting of percolator, toaster and toast plate and on an electrified tray which incorporates a special built-in outlet with cords for each appliance. List price is $16.95. As a companion to the recently introduced "Electro-Speed roaster" there is a new two-quart casserole which will retail for $5.95.

●

Special Reflectors for Sodium Vapor Lamps

Specially designed reflectors which are said to make high intensity mercury vapor lighting practical to use in every branch of industry have been announced by The Miller Co., Meriden, Conn. Styles and types of reflectors for any type of mounting are available. Miller combination reflectors permit the use of ordinary incandescent lamps along with the mercury vapor lamp in a single fixture. These units are designed to eliminate the usual lack of color uniformity.

WHERE TO BUY IT IN THE WEST

Selling Hints

FOCUS THE BUYER on your listing in "Where to Buy" with a display box. This advertising SELLS goods and costs so little.

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Frigidaire Corp.
General Elec. Co.
Graybar Elec. Co., Inc.

Anchors, Guy
James R. Kearney Corp.

Appliances, Household
Apex Rotarex Mfg. Co.
Edison Gen. Elec. Appliance Co., Inc.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
McGraw Elec. Co.
Waters-Genter Div.
Westinghouse Elec. Supply Co.

Boxes
General Cable Corp.
General Elec. Co.
Russell & Stoll Co.

Bus Fittings
Burndy Eng'g Co.
General Elec. Co.

Brackets, Wood
Locust Pin Co.

Buses
Aluminum Co. of America ..

Cable Accessories
General Cable Corp.
General Elec. Co.
John A. Roebling's Sons Co.

Cables
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crucible Steel Co. of America
General Cable Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Maydwell & Hartzell, Inc.
National Elec. Products Corp.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

Carbon Brushes
National Carbon Co., Inc.

Carbon Products
National Carbon Co., Inc.

Central Station Equipment
Tom Wood

Chimes
Square D Co., Inc.

Circuit Breakers
General Elec. Co.
I-T-E Circuit Breaker Co.
Westinghouse Elec. & Mfg. Co.

Cleaners, Vacuum
Apex Rotarex Mfg. Co.
Clements Mfg. Co.
Cramer Elec. Co.

Coil Winding
Jeffries Transformer Co.

Where to Buy It in the West—*Continued*

Compounds, Insulating
John C. Dolph Co.
General Cable Corp.
General Elec. Co.

Condensers, Electric
Allis-Chalmers Mfg. Co.
J. G. Corrin
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Conduit
Aluminum Co. of America
General Elec. Co.
Youngstown Sheet & Tube Co.

Conduit, Underground
Fire Proof Wall Co.
Johns-Manville Corp.

Connectors
Burndy Eng'g Co.
James R. Kearney Corp.

Controllers
Clark Controller Co.

Cutouts
James R. Kearney Corp.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Demand Control
General Elec. Co.
Wesix, Inc.

Distribution Specialties
General Elec. Co.
James R. Kearney Corp.
W. N. Matthews Corp.
Maydwell & Hartzell, Inc.
St. Louis Malleable Casting Co.

Electrodes, Arc Welding
John A. Roebling's Sons Co.
General Elec. Co.

Fans
General Elec. Co.

Farm Electrification Equipment
General Elec. Co.

Fittings, Conduit
General Elec. Co.

Fixtures, Lighting
General Elec. Co.
Russell & Stoll Co.
Smoot-Holman Co.

Floodlighting
General Elec. Co.
S & M Lamp Co., Inc.
Smoot-Holman Co.

Fuses
Trico Fuse Mfg. Co.

Gasoline
Union Oil Co.

Generators
Allis-Chalmers Mfg. Co.
General Elec. Co.
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Graphite Products
National Carbon Co., Inc.

Ground Rods
Crucible Steel Co.
Maydwell & Hartzell, Inc.

Heaters, Air
Edison Gen. Elec. Appliance Co.
Montgomery Bros.
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When YOU need CARBON BRUSHES

Make use of the services of our San Francisco Sales Office and Brush Finishing Plant.

PROMPT DELIVERY ON ALL GRADES OF
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Carbon Sales Division
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Thermador Elec'l Mfg. Co.
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Fowler Mfg. Co.
Lindemann & Hoverson Co., A. J.
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Sandoval Sales Co.
Thermador Elec'l Mfg. Co.
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Johns-Manville Corp.
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Insulators
Corning Glass Works
Graybar Elec. Co., Inc.
Hemingray Glass Co.
Illinois Elec. Porcelain Co.
Lapp Insulator Co., Inc.
Locke Insulator Corp.
McLaughlin Glass Co.
Owens-Illinois Glass Co.
Westinghouse Elec. & Mfg. Co.

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Lamps, Student
Lumidor Mfg. Co., Inc.

Lamps, Sun
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Motor Starters
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General Elec. Co.
Ward Leonard Elec. Co.
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Oil, Lubricating
Associated Oil Co.
Union Oil Co.

Oil, Transformer & Switch
Associated Oil Co.
General Elec. Co.
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Panel Boards
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

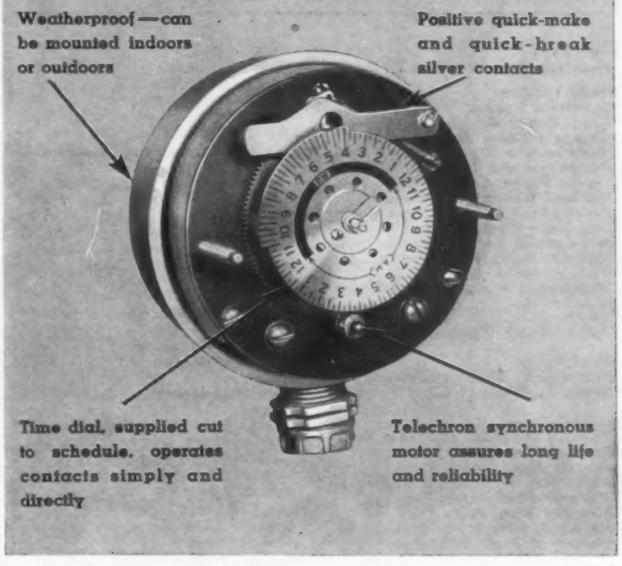
Photoelectric Cells
General Elec. Co.
Weston Elec'l Instrument Corp.

Pins, Wood
Locust Pin Co.

Pole Line Hardware
General Electric Supply Corp.
Graybar Electric Co., Inc.
Hubbard & Company
Joslyn Co. of Calif.
Kortick Mfg. Co.
Locke Insulator Corp.
Maydwell & Hartzell, Inc.

THE G-E TIME SWITCH FOR CONTROLLING WATER-HEATER LOADS

SAVES ON MAINTENANCE


Weatherproof—can be mounted indoors or outdoors
Positive quick-make and quick-break silver contacts
Time dial, supplied cut to schedule, operates contacts simply and directly
Telechron synchronous motor assures long life and reliability

YOU can forget maintenance expense with a G-E Type T-11 time switch. It is timed and powered by the well-known Telechron motor, which has a proved record of reliability. Once set and connected, this switch will keep running without attention.

You also save on first cost, on installation cost, and on inventory.

Let us explain how the features of the T-11 switch make these savings possible. Details and prices are given in Bulletin GEA-1669, "Time Switches for Controlled Water Heating."

●

General Electric has also developed carrier-current equipment for the control of off-peak loads. Which method—time-switch or carrier-current—is best adapted for a particular set of conditions is thoroughly covered by two new G-E publications: GEA-2058, "How to Control Water-heater Loads" and GES-1106, "Revenue in Off-peak Loads Properly Controlled."

●

For copies of publications mentioned above, address the nearest G-E sales office, or General Electric, Dept. 6B-201, Schenectady, New York.

440-55

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WHERE TO BUY IT IN THE WEST

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Pacific Coast Sales Manager: WM. P. SWARTZ
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Southern California Edison Co. Ltd.
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Edison Gen. Elec. Appliance Co.
Edwin L. Wiegand Co.

Ranges
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General Elec. Co.
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Garland-Affolter Eng'g Corp.
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Switches, Safety
Colt's Patent Fire Arms Mfg. Co.
Meyers Safety Switch Co., Inc.
Parker Elec'l Mfg. Corp.
Square D Co., Inc.

Switches, Time
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General Elec. Co.
Sangamo Elec. Co.
Tork Clocks, Inc.

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General Cable Corp.
General Elec. Co.

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For Dry Type Industrial and Signal Use

***Repair Service* for distribution transformers, Auto-starters and similar equipment.**

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General Elec. Co.
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Graybar Elec. Co., Inc.
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Fort Wayne Correspondence School
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Northwest Elec. Light & Power Association
Pacific Coast Elec'l Ass'n
Pacific Coast Elec'l Bureau

Strand, Guy
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